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**No.1 For
Sail & Scale**
November 2018
Vol.68 No.816

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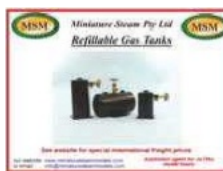


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Published by **MyTimeMedia Ltd.**,
Suite 25, Eden House, Enterprise Way,
Edenbridge, Kent, TN8 6HF.
UK and Overseas:
Tel: +44 (0) 1689 869 840
www.modelboats.co.uk

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Northampton, NN4 7BF.

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CURRENT AND BACK ISSUES

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Telephone: 01795 662976

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Model Boats, ISSN 0140-2910, is published monthly with an additional issue in January by MYTIMEMEDIA Ltd, Enterprise House, Enterprise Way, Edenbridge, Kent, TN8 6HF, UK. The US annual subscription price is approximately 53.40GBP (equivalent to approximately 89USD). Airfreight and mailing in the USA by agent named Air Business Ltd, c/o Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Periodicals postage paid at Jamaica NY 11431. US Postmaster: Send address changes to Model Boats, Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Subscription records are maintained at dsb.net Ltd, 3 Queensbridge, The Lakes, Northampton, NN4 7BF.



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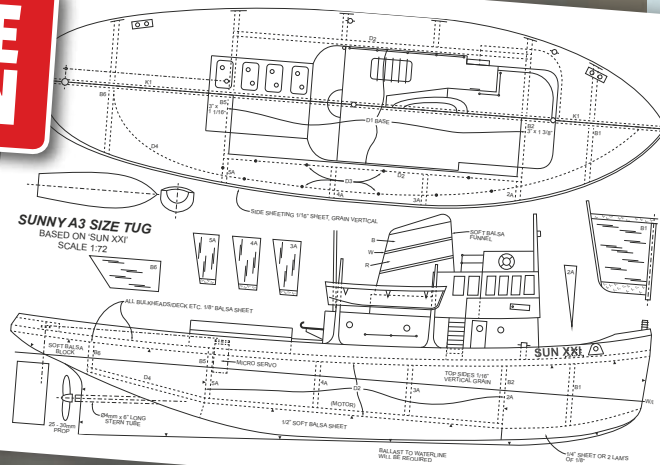
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**FREE
PLAN**

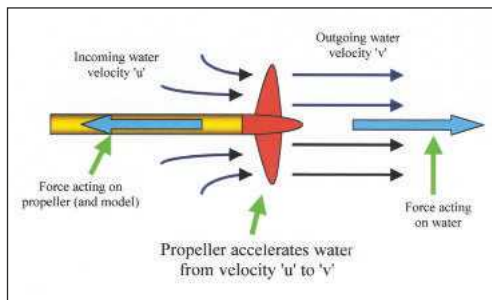


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Hello again and welcome to another busy edition of Model Boats magazine which as usual, includes a mix of military, civilian, electric, steam and sailing boats. We are very lucky that this 'floaty' hobby covers such a wide range of subjects and disciplines and I sometimes wonder how I'm ever going to gather it all together under one roof! On top of that, there is the pleasant distraction of viewing and sailing on the 'real thing' and one recent visit to the Historic Dockyard at Chatham highlighted how useful it can be to the modeller to immerse themselves amongst the very objects that they are trying to create in model form. What makes Chatham magical is that, within the space of a few yards, you can board a 19th Century sloop (HMS Gannet), a Cold War submarine (HMS Ocelot) and a Second World War vintage C-Class destroyer (HMS Cavalier). On top of that, you are immersed in history thanks to Chatham's own history as a Royal Naval dockyard from the 16th Century through to its closure in 1984. The ship building slips alone had me standing, mouth open, gazing at the incredible

architecture not to mention the diverse range of exhibits that they contained which was not only restricted to boats and ships. A display concentrating on the RNLI was incredible and after just about every item we viewed the comment 'I wonder if anyone makes a model of that' soon followed. For those scratch builders out there, the imagination will be flowing and, for modellers, inspiration will surely be found after a walk-around Chatham. I cannot recommend it highly enough; just allow yourself plenty of time!

In the meantime, please keep your contributions coming; I had a good response from my 'call to arms' last month. If there is something you would like to see in the magazine, please send me a message and I will see what I can do.

Martyn Chorlton

Compass 360

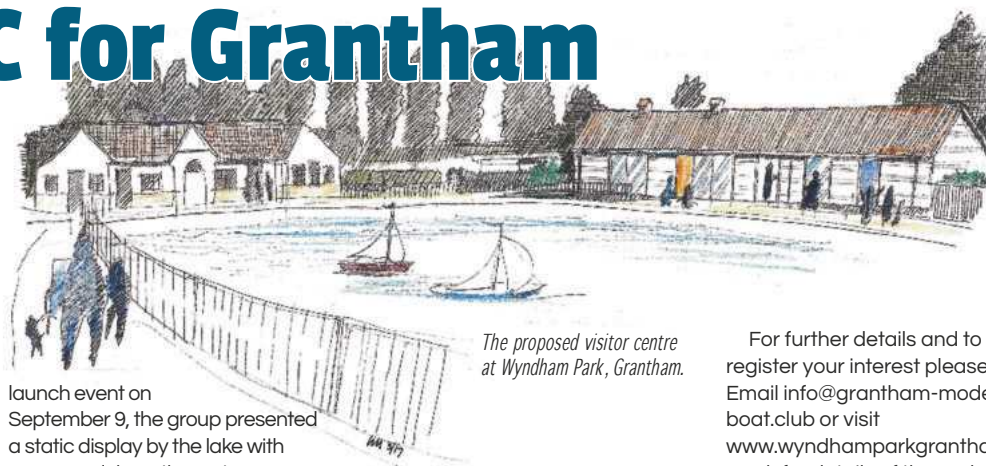
Our news round-up from the model boating world

Editorial Contact: You can reach the Editor, Martyn Chorlton, via e-mail to editor@modelboats.co.uk. The editorial postal address is Martyn Chorlton, Model Boats, MyTimeMedia Ltd, Suite 25, Eden House, Enterprise Way, Edenbridge, Kent, TN8 6HF. Tel. 01689 869840. Use it or lose it!

New MBC for Grantham

Grantham in Lincolnshire witnessed the return of model boats on the water in Wyndham Park from September 9, 2018, thanks to a Heritage Lottery Funded project to restore the park to its former glory.

A small group of enthusiasts are working towards the creation of a new model boat club for Grantham. It is proposed that the club will be formed following the official launch of the new and restored park facilities. During the



launch event on September 9, the group presented a static display by the lake with some models on the water.

The proposed visitor centre at Wyndham Park, Grantham.

For further details and to register your interest please Email info@grantham-model-boat.club or visit www.wyndhamparkgrantham.co.uk for details of the park.

2018 Bottle Boat Championship

Held at the Waldringfield Sailing Club on September 2, 2018, the sunshine and a sea breeze gave perfect, but challenging conditions with a beat against the tide all day as part of the windward/leeward course set by Race Officer, Roger Stollery. Local sailor, Matthew Lake, won this championship by just one point at his twelfth attempt, with well set new sails allowing him to compete at the front of the fleet for a change.

These one design BOTTLE boats were fast enough to beat the incoming neaps tide and gave very close racing for the 20 races and provided a fantastic spectacle for the crowd of family supporters and onlookers alike. Although 16 entries were received, problems caused by the closure of the M25 reduced the number sailing to 13. Racing got underway just as the tide was at its lowest and the beach at its muddyist, which the most junior entries enjoyed the most!

Bernard Kufluk started well by winning three out of the first four races, only losing to Mike Pert in Race 3. It was then Matthew Lake's turn at the front of the fleet, winning a hat-trick of races to take him to the top of the lunchtime leaderboard with nine points, followed by Bernard with 12 and Mike with 14. As the tide came in, the course was reset downriver closer to the beach to avoid crabber's fishing lines. A couple of moored dinghies provided an obstruction on a course.

Matthew won Race 7, but then let Mike win Race 8 before returning to the top of the podium for Race 9. He built up a massive lead over second-placed Anthony Mason and in fourth place young sailor Jos Glen-Gowing who was enjoying his first radio sailing event. The two top boats enjoyed Race 10, with Matthew winning, but Bernard reversed the order to



The competitor line-up in front of Waldringfield Sailing Club.

win Race 11. Mike won Race 12 with Bernard second and let Matthew win Race 13 with Bernard again second. Bernard got his own back by winning Races 14 and 15, before allowing Mike to win the next race.

Race 17 became a match race and close to the finish Mike, who is leading, tacked off the shore first. Matthew stood on and risked going ashore, but it paid off as when he tacked onto starboard he was able to put Mike about and take the lead to the finish. WSC Commodore, Ian Videlo, who borrowed a boat, was third and young George

Moss, also radio sailing for the first time, was fourth. Oliver Stollery got a good start in Race 18 and was able to take second place following Bernard to the finish. He did even better in Race 19 to win from Mike and Bernard.

Everyone was quite delighted that Matthew had won the championship as he had struggled in previous years. WSC Commodore Ian Videlo presented the senior and junior championship trophies and the prizes and thanked the Stollery family team for organising and staffing the event.

Roger Stollery

The seed is sown at Hemel Hempstead

A new model boat club in Hemel Hempstead Herts is being set up with the help of Luton and District MBC. So far two successful sailing mornings have been held on 8 July and 16 September. At the last event the first two members were formally signed up. The club sails on the large lake at the Water Gardens in Hemel Hempstead which has good adjacent parking. At this time the club is still under



the wing of the Luton club and will continue to be so until enough members can be signed up to form its own committee and the club can stand alone. The next formal sailing dates are Sunday 14 October and Saturday 17 November with a 10am start. Anyone who is interested in joining the club and helping it to grow should in the first instance, contact the secretary of Luton and District model boat club contact details can be found on their website www.lutonmodelboat.co.uk, or come along to one of the next sailing days where you will be most welcome.

Gosport Model Yacht & Boat Club

Held from July 29 through to August 3, 2018 and sponsored by Dean and Reddyhoff, this historic championship has been held bi-annually at Gosport since 1923, apart from the war years. The event merits considerable status in the model yacht racing world and attracts top skippers and ex-champions from both free-sailing and radio classes.

Vane A Yachts are individually designed and built to a formula which enables boats of widely diverse size and design to race together on an equal footing. In the modern era, boats can weigh

between ten and 20kg and be over 2.0m long. Vane A's are free-sailed, so there is no radio control and no buoys to negotiate. Beats are awarded three points and runs two and go the full length of the lake. Boats are hauled out at the end of the beat, to be re-trimmed, and spinnakers are usually flown if the wind direction allows. By the end of the event each boat will have raced all the others at least twice. They are raced by a crew of at least two, a skipper and one or two crews, known as mates.

In the 20-strong fleet of this year's event, modern designs carried off all the major trophies.



The six days of racing bought conditions varying between driving rain and winds gusting over 30kts, to light variable winds, remorseless sunshine and temperatures of nearly 30°. The eventual championship winners, Martin Roberts and Bernie McNulty, from Birkenhead Model Yacht Club, sailed a boat designed in the early 2000's by Jon Simpson. The winners of the mid-week Yachting Monthly Trophy, Peter Fothergill and Paul Edwards from Gosport sailed a newly designed Dave Hollom design.

However the fleet also included historic yachts from a more elegant era including Martin Bandey's Ibis, a beautiful John Lewis-designed mahogany planked yacht from the early nineties, built by master-builder John Gale. Ibis was ably crewed by Martin, Susanne Lewis and Bill Pratt and accrued 31 points during the week.

Younger skipper, CJ Vice and mate Rob Vice sailed the iconic Clockwork Orange designed and built in 1971 by Roger Stollery. This year's competition was both challenging and good-natured, a most enjoyable event. There were a high proportion of younger skippers and mates in the fleet promising a healthy future for the future of vane racing.

Mervyn Cook

DIARY DATES 2018

Sun 14th October 2018

Boston Model Boat Club Regatta 7, All Classes. Starts 0915am. Please visit the clubs website at www.bostonmbc.co.uk for good directions to the club and more details or other forthcoming events.

Sat 20th to Sun 21st October 2018

Blackpool Model Boat Show at the Norbreck Castle Hotel, Queen's Promenade, Blackpool, FY2 9AA organised by The Component-Shop. To date, 24 traders, 21 clubs and six individual exhibitors have signed up. The Norbreck Castle hotel is incredibly easy to find, it is situated on the seafront to the North of Blackpool & is such a huge building it is impossible to miss. There are over 800 free parking spaces at the hotel & additional

free on-street parking nearby. The show takes place on the ground floor of the hotel & there is level access from the car park for wheelchair users. This has always been a very popular show & this year it will be bigger & better than ever. Once again this year the show will occupy 2 halls within the Norbreck Castle Hotel, featuring a wide range of different models with a boat pool, truck roadway, tank battleground & model Construction site running throughout the show. Single day ticket price is £6 or just £9 for a weekend pass.

Fri 9th to Sun 11th November 2018

The International Model Boat Show 2018 returns to the Warwickshire Event Centre from Friday 9th to Sunday 11th November 2018. Regarded as one of the UK's leading marine modelling exhibitions, make sure you put the dates in your diary now! The International Model Boat Show is the only 3-day marine modelling exhibition dedicated

to all aspects of marine modelling - an event not to be missed! Organisers are expecting 3000+ visitors, who will be able to enjoy in excess of 600 models from over 25 clubs and societies, where some of the finest marine models will be on display. Venue, The Warwickshire Event Centre, nr Leamington Spa' Opens 10am to 4pm daily. Adult £10 (£9 on-line), Senior Citizen £9 (£8 on-line) & Child Ticker 5-14, £4 (£3 on-line).

Sun 18th November 2018

Hosted by the Sleaford and District Model Railway Club is the Charity Model makers Show in aid of the Lincs & Notts Air Ambulance. The event will be held in Ruskington Village Hall, Parkfield Road, Ruskington, Sleaford, Lincs, NG34 9HT. There will be model railway layouts, 20-plus displays showcasing model aircraft, model boats, trucks, cars etc. Amenities: refreshments, parking, disabled access. Prices Adults £3, Children £1.50, family (2+2) £6 All enquires: Tel:- 07821618718.

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1

1: MANANNAN in Liverpool on August 13, 2017. Ian Greenwood.



Manannan

A wave-piercing catamaran ferry by **Roy Cheers** (Part 1 of 2)

Incat's ferries, I thought when I first saw them, were 'ugly-looking creations', even if futuristic. They are a far cry from the classic steam-era vessels that I had enjoyed modelling. But it was not long before the modeller in me decided that this would make a really interesting and challenging model, just because it was so different. It is worth a few words to explain why it looks so different.

International Catamarans (Incat) builds wave-piercing catamaran ferries in Tasmania. According to Wikipedia, 'A wave-piercing boat hull has a very fine bow, with reduced buoyancy in the forward portions. When a wave is encountered, the lack of buoyancy means the hull pierces through the water rather than riding over the top, resulting in a smoother ride than traditional designs, and diminished mechanical stress on the vessel and crew. It also reduces a boat's wave-making resistance. Design theory calls for very long thin hulls, so in practice most are multi-hulls such as catamarans and trimarans.'

From Incat's website: 'An Incat vessel is instantly recognisable the world over thanks to its unique Wave Piercing profile and centre bow. The main role of the centre bow is to act as a shock absorber for oncoming seas. Normally the centre bow is above the design waterline. As the ship pitches into waves, the

buoyancy force provided by the immersion of the centre bow causes the vessel to reduce its pitching motion by acting as a huge damping system.'

There are around 90 Incat ferries in service around the world and I had hoped to model a vessel in use in Canadian waters. I could only identify one such vessel and, at the time I began researching the subject, the service had ceased operation (although it has since resumed).

So, if you have travelled from Liverpool to the Isle of Man in the last ten years, you almost certainly sailed on the Manannan (Photo 1), wholly owned by the Isle of Man Steam Packet Company (IOMSPC) and this vessel was an obvious second choice to join the Mona's Isle(V) in my fleet. Manannan apparently derives its name from Manannan mac Lir, the Celtic god of the Irish Sea.

Plans and scaling

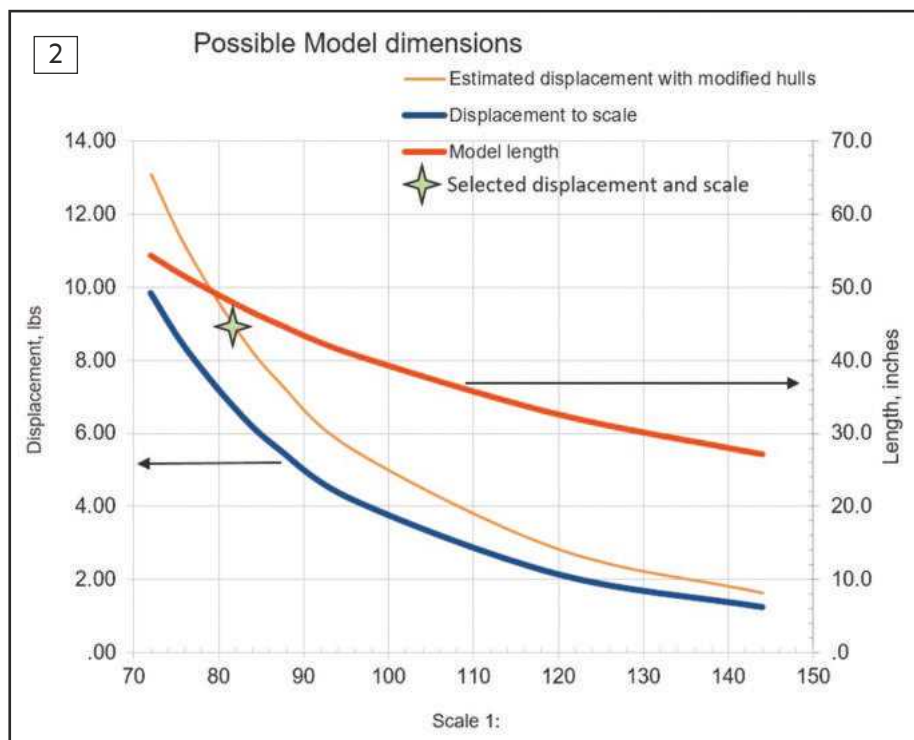
Requests addressed to both the builder and the current owner of the vessel for plan data produced no quick response. I received some information from a modeller in Australia and some useful pictures of the shape of the underwater hull came from a TV series called 'How do they do it?' One program included a segment on the Incat

craft with some pictures taken inside one of the hulls, but without mentioning the location. Then to my surprise and delight, Jim Royston, now Fleet Operations Manager at the IOMSPC, supplied the information I needed, the line plans giving details of the vessel's shape.

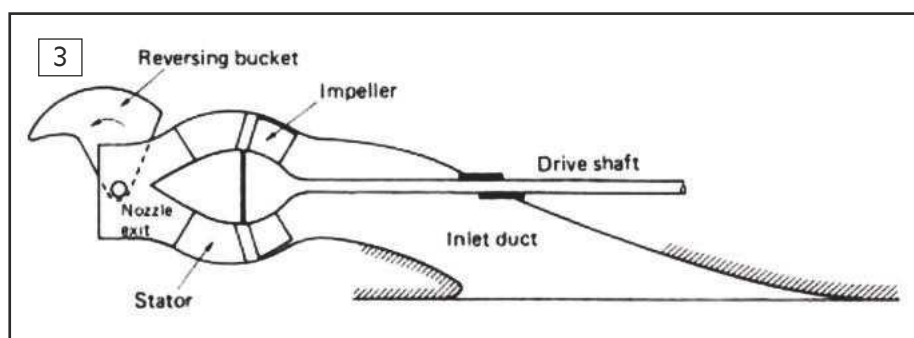
It will be helpful to explain that I am using the word 'hull' to refer to the two side structures that sit in the water, 'body' to refer to the above-water, above-hull part of the vessel, 'passenger spaces' for the decks atop the body and the manufacturer's term 'seaframe' to refer to the whole assembly.

After obtaining plans, the next task was to decide what scale to build and this introduced a number of specific challenges in modelling this vessel. This is where the cube law comes to our assistance. Readers averse to number-crunching might want to skip the rest of this section.

The full size vessel has an overall length of 96m, a hull length of 86.3m, a beam of 26m and a loaded draft of 3.8m with a displacement of 1700 tonnes. Vessels of this type are very light for their size. Anyone who has made scale models from scratch will be aware, and maybe re-learned the hard way, that volume (and weight of water displaced) is proportional to the cube of linear dimensions.



2: Variation of model length and displacement with scale. 3: Simple explanation of a waterjet.



This is shown on the chart for this model (Photo 2). As you move right along the chart the model size decreases. You can see that the length drops slowly, but the displacement drops rapidly. At a scale of 1/144 for example, the model length would be a reasonable 27in, but the displacement is under 2lbs. After evaluating a number of specific scales, I decided on 1/82 and employed modeller's licence to increase the depth of the two hulls by 3/4m (9mm scale) and increase the width of each by 1/2m. These increases allowed for two small waterjets side-by-side, or for the height of a single large one. In effect I could not go smaller due to the size of the waterjets. This scale gave me an overall model length of 1.2m (48in), hull length 1.05m (41½in), and breadth 300mm (12in). I could not apply the cube law to the vessel's displacement because I had increased the hull sizes, but applying it only to the below-waterline, increased hull dimensions gave a model weight of about 8.9lbs (4kg).

Because wind can't be scaled, I was a little concerned, given the model's large side area that a strong wind gust could result in it tipping over. A rough and hopefully pessimistic, calculation indicated that a wind speed of 25mph (40km/h) would tip it over. Since I had no intention of sailing when it was windy, I put that out of my mind.

Power and propulsion boxes

The next question was what size power system would I need to get up to scale speed? Plugging the square law with a full-size vessel speed of 50kts lightship and 40kts loaded, the scale speeds for the model will be between ten and 8km/hr. The speed is higher than typical for a scale model of a conventional ferry, but much lower than that for non-scale racing boat. The obvious place to begin was with the full size vessel data and so it was more cube law number crunching.

The Incat website quotes 28,800kw (38,600hp) as the power fitted in the full size vessel. In theory, this can be scaled for the model by applying the cube law and since I now knew the scale factor, worked out to about 52W on the model. A full-size vessel's engine power is quoted on the engine's output shaft and a model motors on the electrical input, so we have to apply the efficiency of the motor to get a motor rating. An assumption of 50% motor efficiency suggests 100W is more realistic. I've also increased the size of the hulls, and the full size vessel's jets and hull are a more efficient system overall, so more margin is required. Maybe 125W total or even higher should be

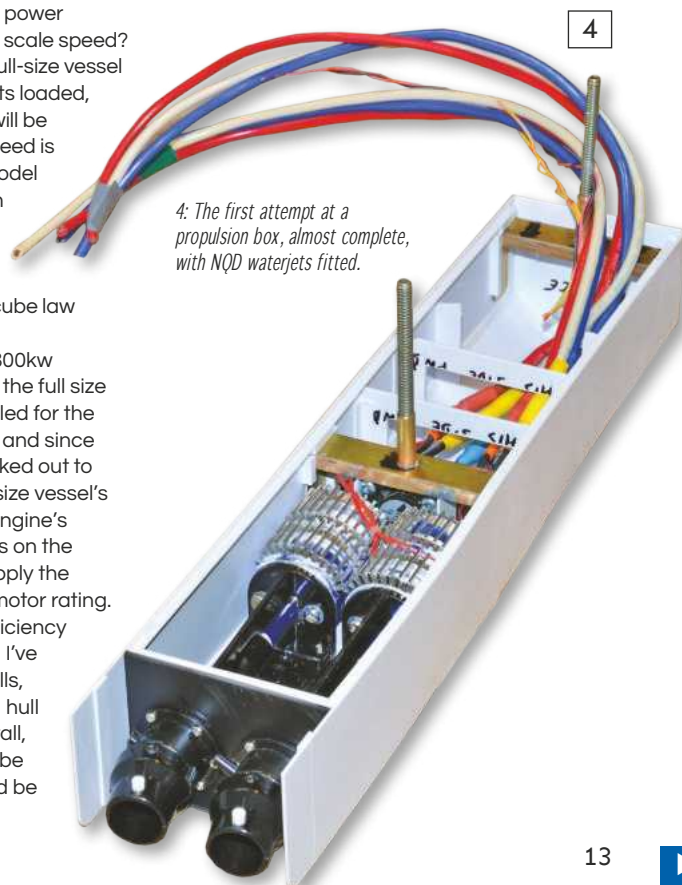
considered appropriate, equal to 10.5A with a 12V battery; a bit of a 'guesstimate'.

The vessel is propelled by four waterjets, two in each hull. If you're not familiar with waterjets, **Photo 3** helps explain their operation. Simply put, a water jet is a pump in a big pipe. Water is drawn in from below and the rotating impeller forces the water out of the exit nozzle producing thrust. To move astern, buckets are lowered which reverses the flow of water.

A set of four waterjets by NQD were purchased to replicate the original. I had bought the NQD waterjets via the internet, knowing their dimensions and the motor's electrical characteristics, but with no knowledge of their hydraulic performance. So right from the start I realised that testing might show a need to replace them with something completely different. My standard building practice of making it possible to remove mechanical and electrical parts without cutting away sections of the model, led to a decision to build two propulsion boxes. Each would be an almost fully submerged container housing the waterjet and its motor separate from, but fastened to, the body.

This construction would mean that the waterjets or anything inside the box could not be replaced without destroying the box, but this was preferable to butchering the seaframe if changes were needed.

This setup proved to be essential. I built one box using styrene sheet and fitted it with two NQD waterjets (**Photo 4**) before I discovered, when testing the almost-completed box, that they were not durable. So the first almost-complete, and a second half-built, boxes were discarded.



6: The insulation former and completed fibre glassed shell of a propulsion box, Mark 2.



5: The Kehrer waterjet, a portion of each side of the exit nozzle was removed before the attachment of the two cylindrical discharge tubes.



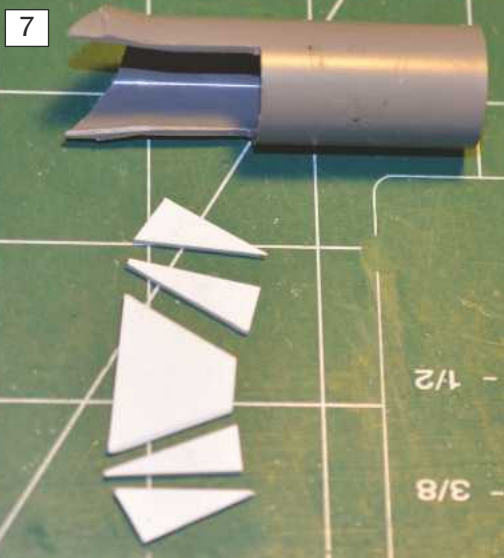
battery would provide about 60mins run time at scale full speed.

The replacement boxes were made with outer walls in epoxy-coated fibreglass over a former made from blue foam insulation (**Photo 6**). The fore and aft end and top pieces were styrene.

The Kehrer waterjets were purchased with a square nozzle discharge but without the steering/reversing buckets. One pair of 16mm ID tubes for a Raboesch bow thruster was used to make up the two discharges as seen on each hull of the full-size vessel. One side of the inlet end of each tube was cut away over a length of 28mm to attach it to the outside of the waterjet nozzle. Several flat styrene pieces were used to transition from the inside of the square waterjet nozzle to the circular tubes. The flat pieces did not form a perfectly circular arc to mate with the tube; instead a three-sided curve over an arc of 147° was created. A 5/8in diameter wooden dowel wrapped in a small piece of polyethylene plastic was used as a mandrel inside the tubes to support the pieces while glued.

(**Photos 7, 8 & 9**) I used this arrangement to make the most efficient transition between the three tubes and to keep the water volume down, but hindsight suggests that a simple flat-sided box would have sufficed.

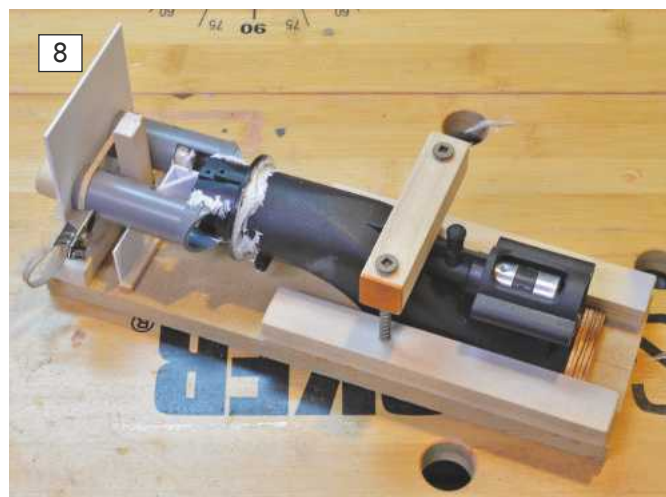
The Kehrer waterjets are not supplied with an intake grille, so one was made up from 1/32in brass wire and sandwiched between the jet and the box base. Clear styrene cover sheets were glued to styrene strips on the inside of the boxes. Clear styrene enables me



7: The styrene pieces making up the transition between the square waterjet exit nozzle and one of the cylindrical discharge tubes.

Waterjet assembly

In their place, model waterjets by Kehrer Modelbau were purchased (**Photo 5**). They were larger and only one could be fitted into each hull. The Turnigy brushless motors driving them are rated at 1980kV (rpm per volt) and a 3-cell LiPo battery of 11.1V would be enough to run the jets close to their max rated speed of 20,000rpm. Each motor would be expected to develop 50–60W, drawing 5.5Amp; well within their maximum (input) rating of 48Amp and 800W. So a 5Amp



8: The first stage in assembling the twin discharge tubes to the waterjet. The centre and top transition pieces were glued in first, then the waterjet/tubes assembly was removed from the holding fixture and the bottom pieces glued. 9: One completed waterjet assembly with an end plate trial fitted.



10: Finishing off one box; styrene strips being glued to support the cover plates.



12 Completed boxes, before fitting reversing buckets.



11: An end plate (outer face up) with a reversing bucket built from styrene, shown with their top edges together.

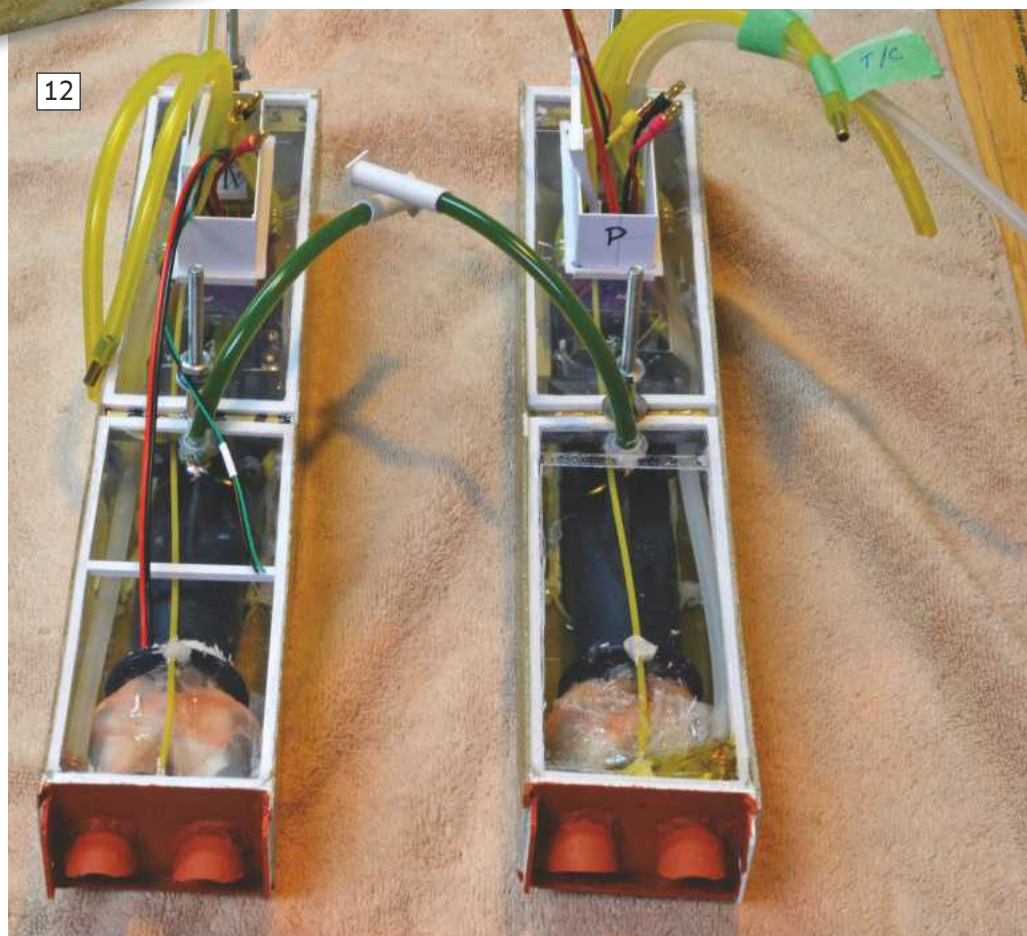
to see what's going on inside should problems develop (**Photo 10**).

The final feature to be added was a reversing bucket on each box. One bucket was made to cover the two discharge tubes (**Photos 11 & 12**). The buckets are operated by mini-servos inside the body via a flexible Gold-N-Cable wire-in-tube.

Watertightness

In previous models I needed only to focus on the locations where the prop and rudder shaft tubes penetrated a hull to eliminate leaks. I did not foresee how difficult it would be, with a multitude of joints in and on the boxes, to make each joint water-tight with a first application of glue. It quickly became obvious that it was necessary to test for water leaks thoroughly and this was done in five stages as the box was assembled.

Initial tests were done by either sealing the discharges and filling the water spaces to see where water leaked from, or place the box in water. The third test was done after the cover plate on the aft part, over the waterjet, was glued into position. At this point the motor and jet were run, holding the water inlet and discharges under water. This again showed up a couple of small leaks from locations which were difficult to pinpoint. So the fourth



and fifth tests were reverse tests – the air space was fully or partially filled with water. These revealed the location of more leaks which were sealed.

The final test, before full operation, was to glue on the cover plate with its trunk over the forward part and then submerge the box so that the top edge was just below the water level.

As construction and testing progressed I began to think that I might have to live with a small leak. A water alarm was always part of my plan and initially was intended to warn if a leak started due, for example, to a strained joint or leaking seal. Two sets of sensor contacts are glued into each box, one right at the bottom, and one 10mm from the bottom.

Box fitting

The top surface of each box has a rectangular vertical trunk which projects up inside the body through a mating trunk in the body. The electrical wires and cooling water tubes are run through this trunk. This functions in the same way as a rudder shaft tube. It extends above the waterline and minimises the possibility of water getting into the body.

Each box is held in place on the seaframe by two bolts. There is one round head #10-24 UNC bolt at approx mid-length which is the main load-bearing support. To ensure I could get them tight without them twisting out of the box, the head of each bolt was drilled

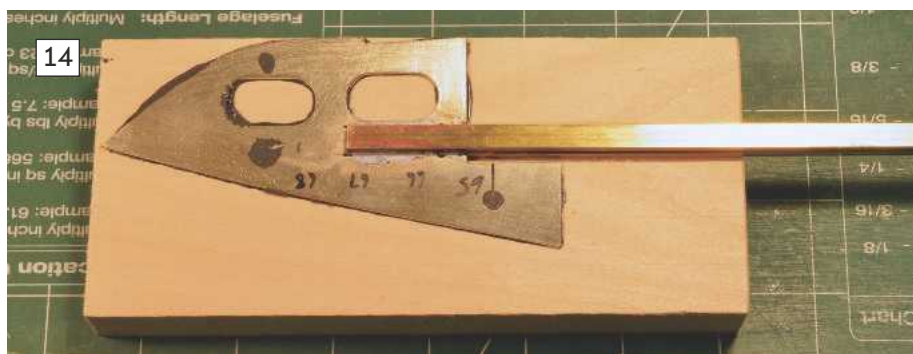
or slotted and a piece of 1/16in steel wire soldered in to act as a sort of fixed 'wrench handle'. The wire is, in turn, held in a piece of brass strip, to resist turning. It was secured using Goop, which forms a strong bond that is slightly flexible. It will allow a little movement of the bolt when lining it up with the holes in the body. The brass strip was bent into a U-shape and the sides were epoxy-glued to the styrene walls. At the forward end is one #8-32 UNC bolt, the main purpose of which is to keep the box aligned. A lighter 'Mark 2' brass support was used for this bolt as shown in **Photo 13**.

Motor mounting

The KMB jet is designed to have the motor mounted onto it but I could not do that, mainly because my brushless motor's mounting holes did not fit and I did not have the capability to make a custom mounting plate. Separating the two has the advantage of vibration in the motor having less effect on the plastic-cased waterjet, a problem experienced with the NQD jets. So the motor is mounted on its own pad in the base of the box. On the other hand, one advantage of having the motor mounted onto the waterjet was that the torque reaction is carried directly from one to the other, and not through the



13: Two of the bolt assemblies for securing a propulsion box to the seaframe. Mark 1 version on the left, Mark 2 (lighter) on the right. 14: The makings of the fore end of one of the hulls, showing the nickel silver rib glued to one half of the basswood 'sandwich'.



fibreglass shell and the glued joints. To take some of the strain off the glued joints, a bracket tying the motor mount to the jet was made from spare sheet metal.

Even though I am using a double universal coupling I wanted the alignment between motor and waterjet to be as accurate as possible (minimising vibration again) and

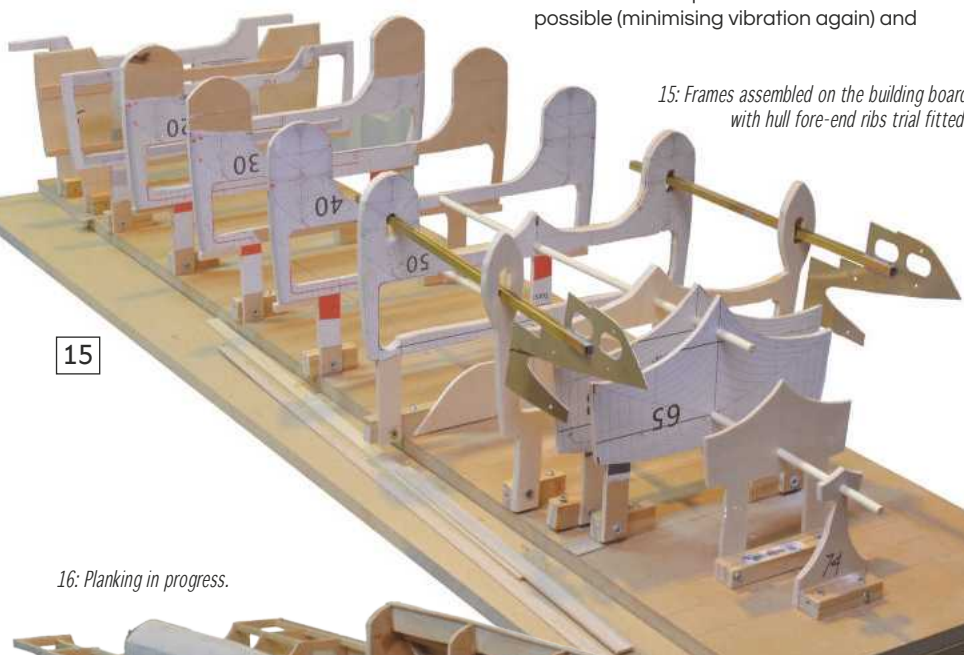
aligning the two was quite simple. To check alignment, two pieces of brass tube were cut; each one was 45mm long (the 16mm length of the 1/8in dia shaft end of the motor, plus the 29mm length of the gap between the shaft ends). One tube was 5/32in (4mm) inside diameter (ID) to fit onto the waterjet shaft and the other 1/8in ID to fit onto the motor shaft. This works because the 1/8in ID tube is 5/32in outside diameter and hence a snug fit in the 5/32in ID tube. The two were slid together onto the motor shaft. By trial and error the height and side-to-side position of the motor was adjusted until the 5/32in ID tube could be slid easily off the motor shaft tube and fully onto the waterjet shaft, thereby ensuring the two were aligned.

Seaframe construction

To achieve the low weight required, the seaframe is built mostly of 3/32in thick and some 1/16in thick, balsa planks or sheets, but with frames mostly either of 1/8in or 1/4in plywood. Except for the propulsion boxes and the fore end of each hull, the construction is quite conventional plank-on-frame.

The hulls are narrow and come to a point at the bow; therefore vulnerable to damage. To provide some strength in this location, a central, vertical rib of 0.9mm nickel-silver extends 100mm from the point. The two were part of a panel etched for me by PPD. Also, two 12in lengths of 1/4in x 1/8in rectangular K&S brass tube are soldered to it and tie the projecting fore ends solidly into each hull. A basswood block of 157mm length was glued, one each side of the rib and then sanded to shape. These form the whole of the projecting fore ends (**Photo 14**).

The flat underside of the body and the upper portions of each side are covered by sheets of 4in wide 3/32in balsa. At the forward end, the sheet is trimmed to follow the top and bottom



15: Frames assembled on the building board with hull fore-end ribs trial fitted.

15

16: Planking in progress.



16

edges of the centre bow. Below that, 1/4in wide planks cover the outside, bottom and inside of each hull. Wood glue was used where clamps could be fitted to hold the balsa to the frames, and CA where they could not. Most of the building frames are 146mm apart, but closer at the bow and stern. In-between the planks were supported and locked together by a mixture of end-on 1/16in balsa strips laid diagonally, and some 1/32in plywood strips. Also, liquid CA glue run along the seam, between two adjacent planks, ties them together very effectively (**Photo 15 & 16**).

Most of the planking was done keel-up, but the forward end of the body has a double curve on the top, which required planking to model it. To plank and fibreglass this top, after doing the same on the bottom and sides of the whole seaframe, I needed to get access. A conventional single-piece building board would have required removing the model and taking away its support before planking was finished. The compromise solution was to make the building board in three pieces, one bottom layer and two top. The frames were fastened to the two top pieces, with the split just aft of the shaped, forward top of the body. The two top pieces were in turn screwed to the bottom one. So after planking the sides, bottom and stern of the hulls and body, the assembly was flipped over and the bottom board and forward end of the top board were removed. Planking of the body top was then done without removing the rest of the model from the remaining building board, followed by fibre glassing (**Photos 17 & 18**). With that done, the propulsion boxes could be fitted to the body and all-important flotation tried out; more on that in Part 2.

One of the small but key details of the body that I pondered over for some time was the 'jaw', where the upward slope of the fore end of a hull meets the body. To turn the 'V' notch at this location into a smooth radius, the

17



17 The forward part of the building board removed to fit the planks around the top edge of the body, prior to fibre glassing.

'V' was filled by a triangular piece of 1/32in plywood. The piece was cut with one edge being concave after drilling it out with a 3/8in hole. It was attached initially with CA glue along its edges and then supported on the inside with some paste epoxy, before filling and sanding the joints on the exterior.

The final step in making the hulls was to fill them with expanding foam insulation. There were two reasons for this; one to provide support to the balsa hull walls and two, to prevent them from filling with water if the walls were punctured.

Passenger spaces

There are two decks of passenger accommodation atop the main body with the wheelhouse on top. The complete passenger spaces assembly is removable to enable access to the inner workings.

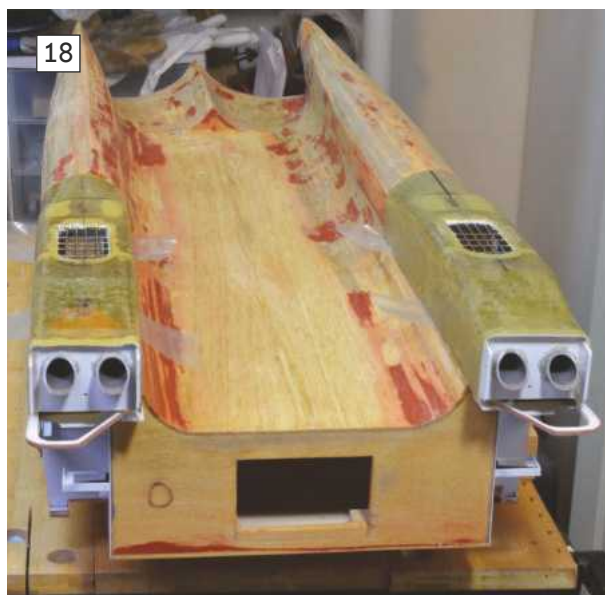
Each deck was constructed separately. The main frames are of 1/16in or 3/32in balsa with the walls and roofs being 1/32in balsa (**Photo 19**). The sides and roofs were simple flat sheets, but the curved sloping fronts

were trickier. A cardboard template was shaped for each one by the application of some schooldays geometry to make a cone from flat material. A few adjustments were necessary to get the shape just right, before a balsa piece was cut. This was soaked in Windex, (which contains ammonia) and then left to dry, while clamped around a suitable round, empty biscuit tin.

Part way through this construction, a conversation with a fellow modeller suggested a variation in building material. It involved coating a sheet of balsa with fibreglass and epoxy. To do this, several 12in long, 4in widths of 1/32in thick balsa were laid side-by-side and coated with epoxy over fibreglass on both sides. A sheet of 0.008in thick mylar was slowly rolled on, one on each side. Heavy weights (books) were piled on and left until set. This produced a building sheet almost as light as uncoated balsa, but stronger, smoother, and waterproof. Once this method was developed, it was used to finish the flat surfaces of the passenger accommodation.

Part 2 will continue with exterior details and operation.

18



19



18: Fibre-glassed hull with two waterjet boxes attached and the mounting bolt brackets being glued to the boxes. 19: The structure of the passenger accommodation taking shape. The main structural pieces are the fore-and-aft strips on the lower level.



1

Boiler Room

The Tool Box

A collection of thoughts on Model Steam Plants
by **Richard Simpson**

One thing guaranteed to create conversation around the pond on a Sunday morning is the contents of our tool boxes that we load into the car and carry around with us wherever we go. At one end of the scale there are those who do not see the need to carry anything other than their model and transmitter and consequently spend parts of their time either sat around chatting because their battery is flat, fitted the wrong crystal, cable broke etc. Or they spend most of the morning pestering those amongst us

with suitably stocked tool boxes for either spare batteries, bits of wire, insulation tape, suitable screwdrivers with impossibly long shafts and a right angled end to get to the screw which they have known has been coming loose for months but they have never been able to reach it. At the other end of the scale there are those who seem to be moving house every time they arrive at the pond with more boxes than you can shake a stick at and enough gear to set up a stall at the next show. We have all been part of those scenarios.

2: My favourite weapon of choice is the aluminium cantilever box. I'm sure I paid around ten pounds for this and, having looked after it over the years, it remains in perfect condition.

1: Aluminium cases used to be very readily available and very cheap. There was a time when I rarely came home without a new one. Now I'm glad I did as I find them extremely useful.

Most of us are somewhere in the middle but, those of us who operate steam models particularly, really do need the availability of the basic support that a well thought out tool box provides to operate our steam models safely and reliably.

Consequently after more years than I care to remember of operating steam model boats at the pond side I thought I would offer the contents of my own box as nothing more than an example of hopefully something that may generate some conversation. It is far from perfect and would not suit everyone but it may just prompt one or two to include an item that they hadn't thought of. Nothing, as they say, is perfect and there have been many times when I have wished for that very screwdriver mentioned above, however the better thought out the tool box, the lower the risk of not having what you want to hand when you need it. Most of the things in my own box are there for normal operation of the model rather than repairs or maintenance, as most of that should be done at home. If we also bear in mind just how important it is to conduct a simple bench test before every outing to the pond, by doing so we are already reducing the need to carry more remedial items around with us than necessary. Consequently I always recommend a clean-up and a bench test before loading up the car. I do mine the day before I go anywhere and make sure I check such things as battery levels and the smooth operation of everything before topping up oil levels, oiling the engine, emptying the separator and oiling the shaft. This doesn't guarantee success but it does improve the chances and at least give you the satisfaction of knowing you've done your best.

The Box

A number of years ago there seemed to be a glut in all the large hardware outlets of varying shapes and sizes of aluminium cases and boxes at ridiculously cheap prices (**Photo 1**). It got to the point where every time I returned home from a trip to my local 'You Can Do It', I had gained another box or case because I knew I would find a use for it one day. Well I have reached that day and still use my aluminium cantilever boxes for the pond side. I have one for my electrically driven models and one for my steam models and have become so used to them over the years the world would end as I know it if I didn't have one. I like the cantilever arrangement as I find I can get more into a compact volume and they pack into the car neatly and easily alongside the models. I have never found the need for anything bigger and, of course have to accept that I will have one or two items that do not fit into it, but it keeps all the smaller bits and pieces together and makes for easy access to everything. My own examples also include moveable dividers for the main space and the side shelves, which are perfect for keeping things separated and in a logical arrangement (**Photo 2**).



2



The Contents

Starting with the largest compartment in the centre of the box where the bigger items go.

1) Fire Extinguisher. Now there is a subject for plenty of debate. There are those who think if we need to use a fire extinguisher we have done something terribly wrong and should not be operating model boats at all. There are also plenty amongst us who would not know what type to buy or how to use it and there is also a sound argument that, if used the wrong way or the wrong type, a fire extinguisher can actually make things worse. I agree with all those arguments. In my own case I have done a lot of certificated firefighting training over the years and I consider myself to be fairly competent at knowing what type of extinguisher to use for what type of fire and how to use it. For those who do not have the benefit of current firefighting training I would suggest that you stay with a type of extinguisher that does not present risks, such as water onto an oil fire or a CO₂ extinguisher, but stay with something fairly easy to use and safe. Dry Powder, while quite effective

makes an awful mess and Halon, while by far and above the most effective and safest you could get is no longer available as Halon was outlawed many years ago.

So my own is an aerosol based liquid chemical type, suitable for most classes of fire which uses a chemical reaction to extinguish the fire (Photo 3). I cannot find any details on the chemical reaction but I have watched a number of independent third party videos and it does seem to do the job well. It is light and compact so goes in the box easily, can be used on just about any fire type we are likely to have in our boats, including electrical, it is very easy to use and it leaves a liquid residue that cleans up easily with a cloth. You can also get specific extinguishers for Li-Po batteries nowadays but they tend to be a lot more expensive and the type I have would at least save the remains of the boat if not the battery, which is almost certainly past saving anyway. All this for less than £20 doesn't seem to be too bad to me.

2) Scales and Spare Gas. If you use disposable or refillable gas tanks there is only

3: You really do not need much more extinguishing power than you have in an aerosol can at the pond side. This is more than adequate for any model fire and has the potential to save your pride and joy before all your well intentioned friends sink it with flasks of tea or cups of pond water.

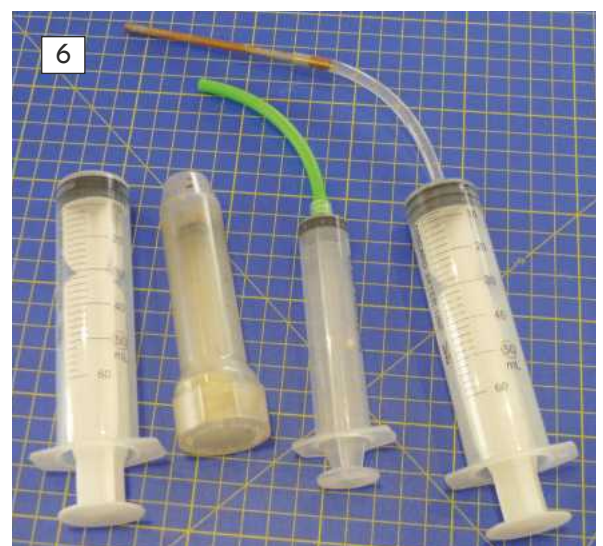
4: Absolutely essential for me is knowing just how much gas there is in a tank at any time. You soon become familiar with juggling tanks around to maximise their use and use the gas most efficiently.

ever going to be one way in which you know what the contents of the tank are and that is by weight. In my Borkum I use disposable 100g tanks by Coleman. I know that a full tank is around 193g and empty is around 93g, so dropping my tank onto the scales immediately tells me how much gas I have, (Photo 4). This enables me to be able to use low tanks to raise steam at the pond side and then change over to a full tank for steaming around the pond. This also allows the most efficient use of the tanks and no wasted gas. Scales such as these are available for around £5-10.

3) Igniters. How many times have you seen someone trying to light their burner with a flame that is either weak or intermittent or even regularly blowing out? I gave up on that game many years ago and invested in a good reliable torch for igniting my burners. It has a piezo igniter, runs on petrol and gives a strong hot flame that will not blow out even in the freshest breezes. I never have a problem lighting the burner and know very well that if my torch will not ignite it then there is something wrong! As a back-up, I also carry a smaller petrol torch and, if all else fails, I still have an old disposable cigarette lighter. My torch cost around £5 and is worth its weight in gold (Photo 5).

4) Syringes. I need two syringes, one to fill the boiler with distillate, fitted with a piece of copper pipe to drop into the boiler and one to empty the separator. The dirty one for emptying the separator is kept in an additional tube to prevent it leaving a mess in the box. The other two syringes are spares for whenever needed. These can all be found at shows for around £1-2 (Photo 6).

5) Water Bottles. One water bottle is filled with distillate to top up the boiler, unless it is a



5: Also a prime requirement is a reliable and effective means of igniting your boiler. The petrol torch on the right is a substantial flame that ignites every time and burns fiercely enough to not blow out. 6: A range of syringes make life a lot easier. Making sure you do not mix up the 'clean' ones with the 'dirty' ones is a lot easier if you vary the sizes.



7



8



9

7: There is still room in the bottom for a bottle of distillate, more than enough for a mornings sailing, and a bottle for the waste from the separator.

IMG_0008: Hand tools are especially a personal choice and these socket drivers get used very infrequently but there is room for them and they may be very handy one day.

9: You don't need a lot of room for a few pieces of wet or dry abrasive paper and it might just prove a handy inclusion for cleaning something up such as an electrical contact.

10: I'm not even going to explain why I have had these so long but it is obvious they do not get a huge amount of use. Now I have Anna though I do use them a little bit more frequently.

11: Pretty standard BA spanners are a must and, while possibly not cheap, should certainly last a lifetime if looked after.

10



cool day when I might put hot water into a flask to enable steam to be raised a bit quicker. The dirty bottle is for the contents of the separator. The oily water and mess is decanted into here via the syringe then taken home, (Photo 7). There I have a spare plastic petrol can where the bottle gets emptied into when full. Every few years or so the petrol can goes to the council tip and gets emptied into their waste oil disposal facility.

Now we go into the smaller side compartments in the cantilever sections with the dividers positioned to make most use of the space.

6) A set of hex socket drivers. The red-handled set are metric, which occasionally also match up with imperial sizes and the two blue-handled ones are imperial sizes of common nuts. These are particularly handy for tightening up hex-headed screws deep in the hull as long as the head is accessible from above. If not, wait until you get home! I have had the red handled set for many years and have no idea what they cost and the two blue-handled ones were, at one point, supplied free with Graham Industries hex screw accessory sets for their TVR1A engines (Photo 8).

7) Fine Grade Wet and Dry. Always handy to have in the box for those occasions where a rubbing face may need cleaning up but not for getting involved with anything too serious. That is why I only have a few square inches of it. I am

not going to start lapping in running faces on the pond side that is definitely a job for the work bench at home with a cup of tea and some loud rock music on. The 2.4 flag is for those times when you visit an event where you might be required to display a flag on the transmitter aerial (Photo 9).

8) Solid fuel tablets. If I am using the Anna I need the solid fuel tablets available. I will only send it out once or twice and only need two tablets per outing so a box will last a long time (Photo 10). They can be ignited with the same torch as I use for the gas burners.

9) Set of BA spanners. These are available from most shows and model engineering supply outlets for around £12-13. They should fit the various plugs on the boiler for filling or for any tightening up of a fastening around the engine (Photo 11).

10) TDS Meter. This does nothing more than measure the Total Dissolved Solids in a sample of water as a Parts Per Million reading, ppm, and is far from necessary, but it is quite a handy device to have available. It is not temperature compensated and is not the most accurate, but it does give an indication of water quality from a dissolved solids perspective. It has been used to demonstrate the quality of pond water before now, which can run into the many thousands of ppm, which is sometimes an eye-opener to those who had not thought about it. You would expect tap water to be in the range of 200-



11

12

12: Always worth it just to see the look on a fellow steamers face who has been happily putting pond water in his boiler in the knowledge that it is 'only a bit dirty'! Our pond usually gives a reading of many thousands of ppm, against a tap water reading of a couple of hundred, which I still would not consider using.

13

14



15



16



13: More hand tools, usually included because of being required at some point in the past. Once the box gets full you then have to decide which ones are probably never going to be used again and leave them at home.

14: All my lubricants are in syringes for their ease of use and convenience. You have to remember which is which but I have never had any trouble being able to distinguish between steam oil, engine oil, light oil and Vaseline.

15: The final bits and bobs drawer with no other home. If in doubt I stick it in here.

16: It is very surprising just what you can get into a carefully packed box and the cantilever arrangement helps to keep things accessible. My own box has developed over the years and occasionally needs a clear out but it remains fairly consistent nowadays.

300ppm and distillate to be around 20-50ppm. This meter cost around £17 and more accurate temperature compensated devices, which may also read PH values are available for more, but I find this one more than adequate to make the point (**Photo 12**).

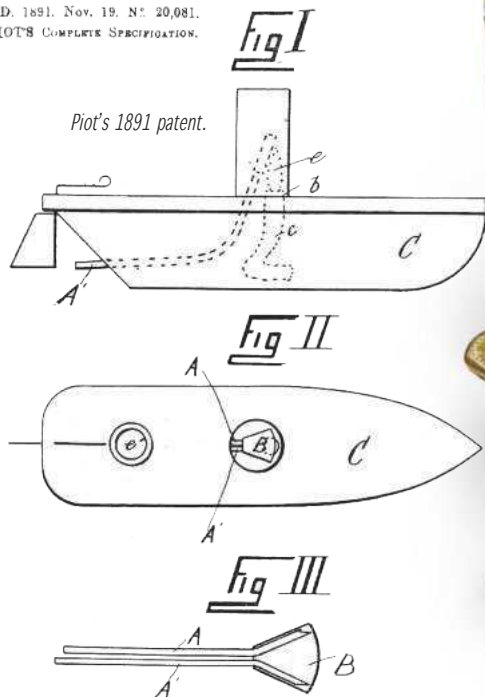
11) Hand Tools. Nothing too exciting, just a few bits and pieces that have proved their worth over the years. The silver pencil looking device is a spring loaded retractable claw for picking those dropped nuts from out of the bilge and the forceps are disposable doctors ones from a friendly doctor (**Photo 13**).

12) Lubricants. My lubricants are all kept in syringes (**Photo 14**) which are then wrapped in polythene bags. I have a syringe of steam oil, engine oil, light oil and a syringe of Vaseline. The bottle is a reserve supply of steam oil for when it is really cold and I get bored of waiting for the oil to come out of the syringe!

13) Bits and Bobs drawer. Insulation tape, PTFE Thread tape, spare gas tank valves, a funnel, a lubricator cap, syringe tip and some assorted silicone tubing and that is about it (**Photo 15**).

As I said, not to be considered as a definitive collection of tools that will guarantee a successful morning at the pond but what I have narrowed it all down to over the years is what works for me and reduces the risk of not being able to enjoy a morning of sailing my steam model. It all fits in surprisingly well, after a bit of thought is put into the packing and access is good enough for what I need (**Photo 16**).

A.D. 1891. Nov. 19. N° 20,081.
PIOT'S COMPLETE SPECIFICATION.



Piot's 1891 patent.



ABOVE: A typical modern reproduction pop-pop boat.

Flotsam & Jetsam

Toc-Toc-Brrr! The mysterious world of 'pop-pop' boats by John Parker

1 27 years ago, a Frenchman named Thomas Piot living in London obtained a patent for a toy boat that was propelled by a new type of heat engine. The engine utilised steam, but not in the usual way, and as far as I know it has only ever found application in propelling small toy boats. After Charles McHugh improved the engine in 1926 by incorporating a diaphragm to produce a spluttering engine sound, these became known as pop-pop boats, or the equivalent in many languages: put-put, pouet-pouet and poof-poof to name a few.

The essential qualities of the pop-pop boat have kept it in production ever since. Low cost tinsplate pop-pop boats have been produced in many countries including England, Germany, the USA, France, China, India and Indonesia; home-made examples are to be found in the poorest of third-world villages and dearer 'reproduction classic' versions are made for the nostalgia market. These essential qualities of the pop-pop boat may be summarised as being: Simple; Cheap to buy or easy to make; A real heat engine; Fascinating to watch and operate and Mysterious in their working principal.

The pop-pop described

In its usual improved form with a diaphragm, the pop-pop boat consists of a two piece (top and bottom) pressed tinsplate hull with

Diaphragm type pop-pop engine.

Kit of parts for a pop-pop boat available from poppopboats.net.



two metal tubes exiting its stern below the waterline. Within the hull, the tubes are bent upwards and enter an inclined rectangular reservoir or boiler which has space beneath it for the heat source, usually a candle stub. The boiler has a thin metal top which acts as a diaphragm to produce the engine's sound. And that is really all there is to it. A rudder, funnel and long-handled holder for the heat source are optional extras. Another form of the engine has the tubes formed into one or more coils instead of a boiler tank. This type is simpler to make, but lacking a diaphragm, produces little or no sound.

In operation

Starting a pop-pop engine requires the tubes to be filled with water. This may be done with the aid of a small squeeze bottle or by sucking on a flexible plastic tube, temporarily attached to one of the boat's exhausts, whilst the other exhaust is kept immersed. Then it is a matter of lighting the candle and standing back. At first, nothing happens. Cheap junky toy rubbish, you think to yourself. Why did you have to waste your mo... then, quite suddenly, it bursts into life. Accompanied by an unmistakable toc-toc sound and evidenced by the ripples spreading out from its hull, the

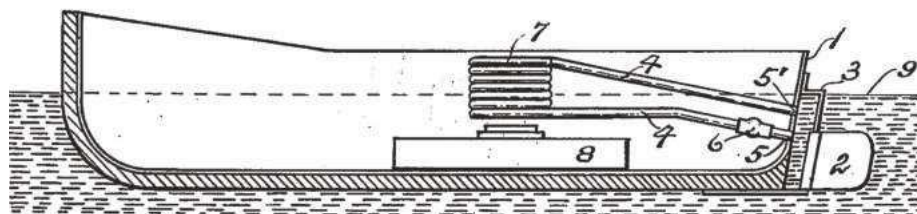
Jan. 15 , 1924.

1,480,836

W. F. PURCELL

PROPELLING DEVICE

1924 patent for a coil type pulsating water engine.



little boat begins to tremble with excitement and seems to want to move in all directions at once. With luck, if you've got a good one, there will be a net movement in the direction the boat is pointing, but only if there is not the slightest wind to contend with. To your further surprise, most engines will occasionally step up a cog or two, and exceed all previous efforts with a burst of speed that has the engine going toc-toc-brrr. But, just when you call your friend over to see how well it's doing, it settles back into the familiar toc-toc-toc routine again.

Principles involved

For all its apparent simplicity, the pop-pop's operation is more complex than it seems. It is clear the original inventor had little idea how

it worked and for nearly one hundred years published descriptions of its operating cycle were in error. What was never in doubt was that water heated in the boiler was turned into steam by the heat of the candle, forming a pressure wave that drove the remaining water out via the only exits, the submerged tubes. The reaction to this drove the boat forwards. Meanwhile the steam in the pipes was condensed by the cold water and the resulting reduction in pressure caused more water to be drawn in through the submerged tubes to repeat the process, with the diaphragm vibrating in tune with the power impulses to provide the audible engine sound.

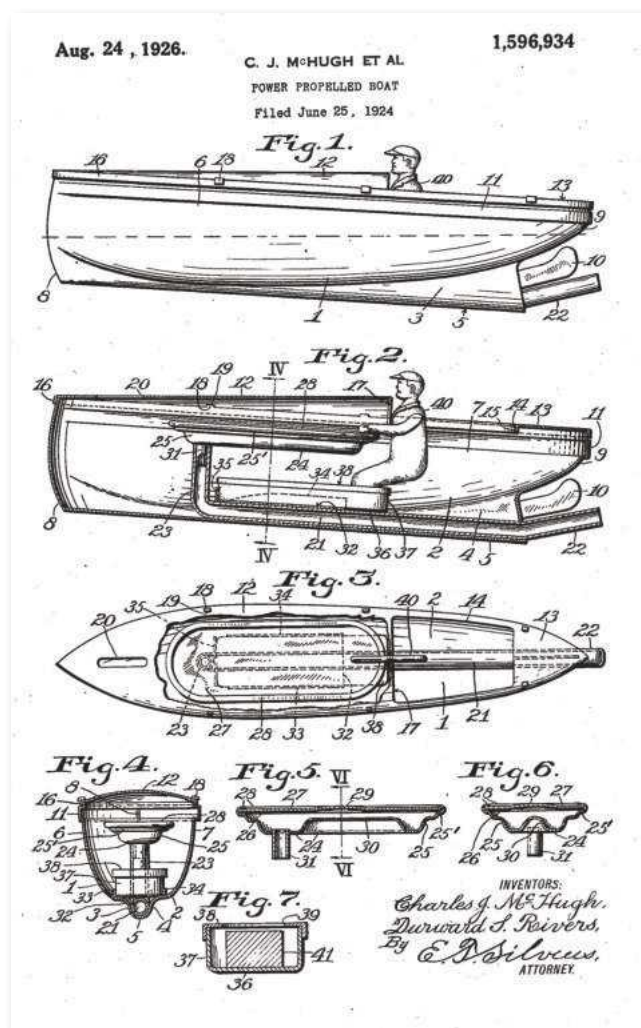
This sounds simple, but does not explain why reaction to the intake stroke does not balance out the exhaust stroke, leaving the boat vibrating but with no net movement.

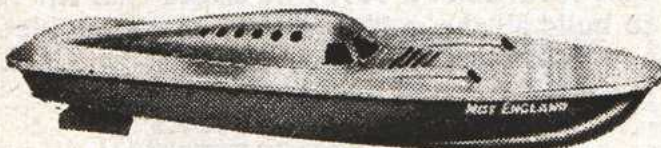
Possible explanations have involved consideration of the differing flow pattern of the water in and out of the exhaust tubes and what happens to its momentum as it encounters the hot boiler surface. The cause of the periodic speeding up of the engine has also been the subject of debate, whether it be the build-up of air in the boiler from the small amounts dissolved in the water and having to be expelled, for example, or a slight excess of heat input accumulating until it enables a faster mode of operation which continues until the greater cooling effect of that mode causes the engine to drop back down to its usual speed.

Whatever the case, the pop-pop engine, more properly called a Pulsating Water Engine (PWE) does not give up its secrets readily and though crude in appearance, resists all attempts to improve it and does not scale well into larger sizes.

A fine example

The best example of a commercial pop-pop boat in my local model boat group is owned by one of the members, Don. Unusually for a





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Merit House, Potters Bar, Middlesex

INVENTORS:
Charles J. McHugh,
Durward J. Peirers,
By E. D. Silvers,
ATTORNEY.

ABOVE LEFT: Hugh's 1926 patent for the diaphragm type pop-pop boat. ABOVE RIGHT: The Victory Industries/SEL "Miss England" utilised a silent coil type engine.

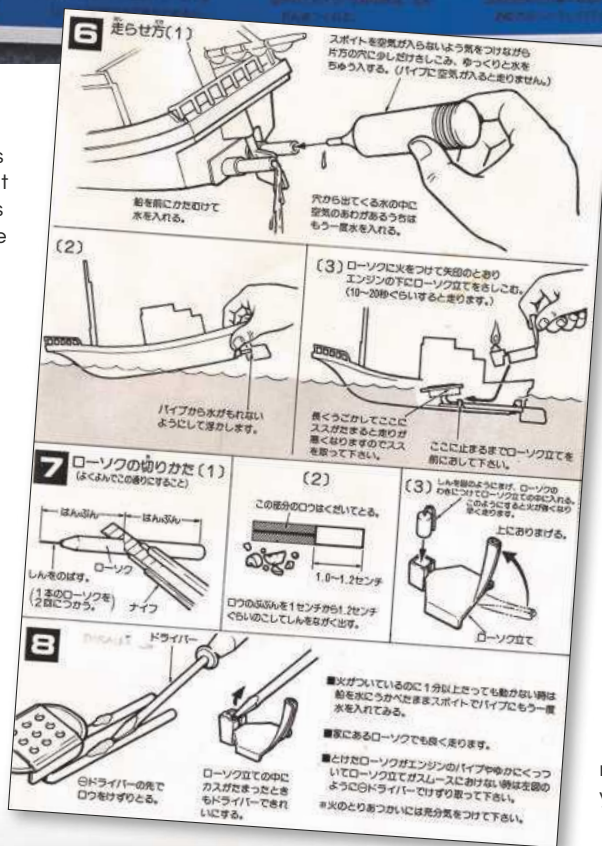


pop-pop, and indicating a fair degree of faith on the part of its designers, it is all plastic apart from its engine parts. It was a kit bought in Japan in the 1980s and is of a deep-sea fishing vessel, the Katsuotsuri (Bonnito). Complete with a landed fish at the stern, the small hull houses a conventional looking PWE engine with a tinplate candle holder. On the original box is a series of diagrams explaining the operation of the engine (alas, in Japanese, but we can guess what they're saying).

Somehow this boat manages a performance that comfortably exceeds what can be expected of the usual tinplate pop-pop, for no apparent reason. One calm day at the lake, it managed a voyage to a distant buoy and back at a slow but steady speed, assisted only by gentle nudges in the right direction from the other boats. It never caught fire once, though it did lose its rear mast in the course of retrieval.

ABOVE: Japanese plastic fishing boat pop-pop.

LEFT: Instructions showing how to prime the engine etc.



Improving the breed

The PWE has been the subject of much experimentation to improve its performance and some have reported on the results they achieved in past issues of Model Boats. One avenue of exploration is to fit the two water tubes with one-way valves and arrange for the intake tube to face forward, so that its action adds to the forward motion rather than subtracts from it; another is to insulate the boiler from the condenser (the immersed end of the tube) by joining them with lengths of silicone tubing. Toby Churchill, writing in Model Boats for the November 1987 issue, wrote of achieving a speed of 1.18fps (1.3kph) by such means. Quite a blistering speed, especially if you touched the hot candle holder.

Tug boat pop-pop under way in the bath.



Tug boat pop-pop with rudder and funnel.





Eye of the Wind



Fraser Gray
explores this
beautifully restored
and meticulously
maintained
Brigantine

The Eye of the Wind is a magnificent Brigantine that has sailed the oceans for over 100 years. She has had an adventurous life. Her long career began in 1911 when her keel was laid at the Brake shipyard in Germany and she was launched under the name of Friedrich, going on to carry cargo across the Baltic and North Sea.

Following a storm in the autumn of 1955, she ran aground on sand banks and was abandoned to the sea. The hull was salvaged and an engine fitted and she was used as a fishing boat off the coast of Iceland. Later, as a result of an engine room fire, she narrowly avoided the scrap yard, and consideration was given to converting her into a floating dockside pub. The wreck of this once magnificent tall

DATAFILE

Type:	Brigantine
Builder:	C. H. Lühring shipyard in Brake, Germany
Completed:	1911
Length:	40.23m
Beam:	7.01m
Draught:	2.70m
Gross Tonnage:	129GT
Engine Power:	600HP Engine and 750 square metres of sail
Speed:	8 knots
Complement:	12 crew and passengers
Flag:	United Kingdom



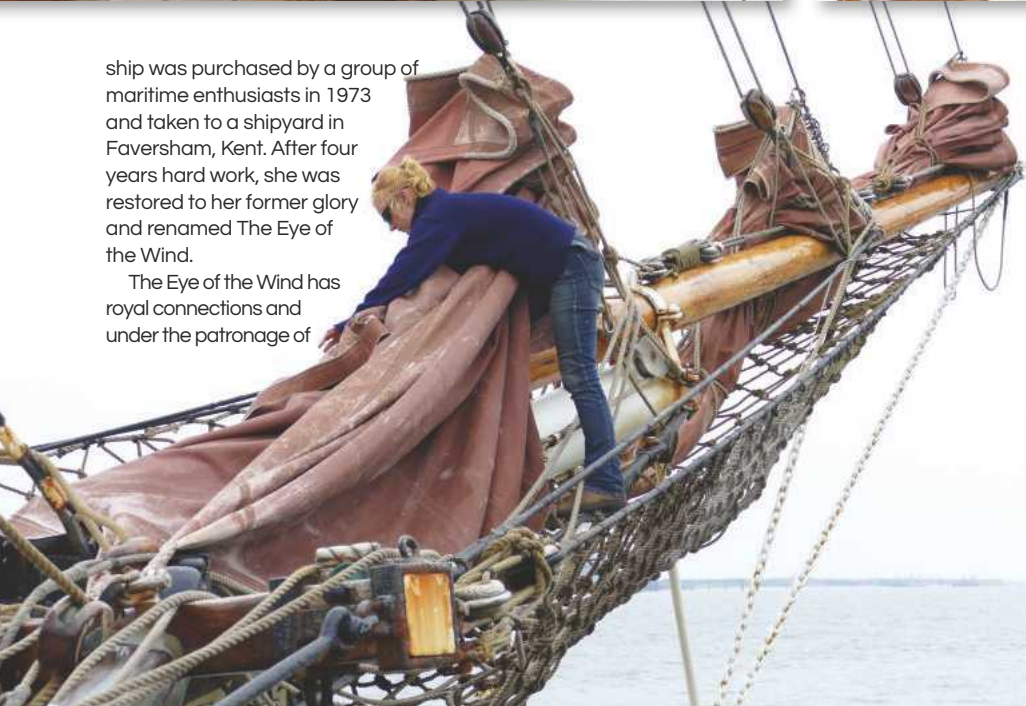
ship was purchased by a group of maritime enthusiasts in 1973 and taken to a shipyard in Faversham, Kent. After four years hard work, she was restored to her former glory and renamed The Eye of the Wind.

The Eye of the Wind has royal connections and under the patronage of

HRH Prince Charles took part in Operation Drake, following the route undertaken by Sir Francis Drake in 1577 to circumnavigate the globe. The voyage took her two years to complete.

The Eye of the Wind has featured in films such as Blue Lagoon and film stars such as Jeff Bridges, Brooke Shields and Tommy Lee Jones have walked her decks.

Today The Eye of the Wind is available for private charter and a number of limited places are available for those who wish to experience life aboard a tall ship. ●







Having an RN commander as a guest of honour, Runcorn MBC had the appropriate ensign on display.

The 29th Model Boat Convention

being no different. In fact, the level of club and vendor numbers has remained reasonably constant, even though there is the inevitable ebb and flow of numbers visiting the Convention and model events in general. The event is located within the main stand at Haydock race course providing a level of comfort with excellent facilities which has become the benchmark for all other such venues. The present organization is particularly well honed having been at the helm for almost 18 years and leave nothing to chance having a good cadre of helpers to ensure the event runs smoothly. The Guest of honour for 2018 was Cdr Bernard Thompson Chief of Staff naval headquarters

The Models

As there are so many models to choose from, reporting on this event is always going to be a difficult task but as a one of the judges, I can get in at close quarters appreciating what is on display. I am always impressed, not just at the level of detail, but the high standard of modelling. In fact, reviewing images of the very first Convention, I would say that the standard today is much higher with a greater variety of models on show which is quite reassuring.

When it comes to any specific model, then Paul Bannon's superb USS Midway says it all. Scratch built, even down to the air group with a number of working features gaining a well-deserved best in show award. Another model that caught my eye and gained the Presidents Award was the Mersey Ferry Royal Daffodil 2 by Clint Nichols. Another well-deserved winner to take the themed award of Best Ship of WW1 was George Barrett with his detailed tug Kearn.

Club displays & Vendors

As you come to expect at Haydock, the club displays are thoughtfully arranged either reflecting the theme or the diversity of interest, which is what makes these displays so interesting. Take for example Bury Metro, they have included a good selection of Yachts at various scale, fast electrics, sport/competition racing and of course scale. This illustrates



Irish Sea passenger vessels from a bygone era seen here in model form.

The 2018 MBC at Haydock Park reported by **Dave Wooley**

Reporting on the MBC has always been a privilege, having attended all but one. There has always been a buzz around the event, generating a level of anticipation amongst those participating and visitors alike, with the 2018 event

Armed Tug Charon by Brian Cowel.





ABOVE LEFT: Bringing a bit of realism to a model is being seen more often and with some interesting results. ABOVE RIGHT: David Jak's demonstrating his sub chaser ML211.

well that diversity of interest is all important for encouraging more members into the hobby.

Club displays at shows and particularly Haydock are very much a show case into our hobby, the more attractive and interesting the display the more positive the response. But essentially it is all down to communication and one of the best at this is Kirklees. Viewing superb models is wonderful, but asking questions and getting answers is what makes the club displays more than the sum of the models on display. I learn so much more by asking a question of the builder. A good example of this was having a chat with George Barratt on the Etherow MBC stand about his use of Litho plate on his latest build a Clyde Puffer c1888. The converted prize of best themed stand went to Southport MBC.

A mentioned, there was all the usual vendors and it is always a pleasure to stop and chat, to look and learn and see the new model or product on display. It's gratifying to see manufactures such a Mountfleet with new models such as the steam coaster SS Ebbrix and looking to the future with a more diverse range including submarines. Some vendors like Components Shop seem to have been inundated with customers throughout the show a healthy sign indeed.

Conclusion

Another year of the Convention has past and next year will be the 30th. With this mile stone it will become the longest running dedicated model boat show in the UK. Of course, this couldn't happen without the enthusiasm and dedication of the show organisers, clubs and traders who, over the years have kept and maintained the show at its present high level.

Numbers are the key to how an event will progress, there is no magic wand here, the modelling public attend for a host of reasons and getting more through gate is always going to be a priority. ●



ABOVE: The pond also provides an appropriate back drop to this lovely Armed Motor fishing boat.



ABOVE: Ribble MBC with the latest on the water team event 100% fun.



ABOVE: Guest of honour, Commander Bernard Thompson and Dr Nick Jednakiewicz DI (centre) president of the Convention admiring the anti-aircraft cruiser HMS Sirius by Allan Derham representing the Surface Warship Association.



LEFT: A superb example of scratch building by Colin Vass of the powered cutter for his 1/72 Italian Cruiser Zara.

SS EBBRIX



Scale: 1:32

L.O.A. 57 inches (1048mm)

Beam: 9 3/8 inches (238mm)

Displacement: 36.75lb (16.7kg)

Ebbrix launched by Cochranes and Sons of Selby 11.11.1916. For Robert Rix and Sons of Hull.

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Note - Forefoot Plans 'a' from N/A Ship
See MALTA MCB 1944 P/L in Shipping Plans (17)

The CSB was equally useful in open water as well as inland waterways.



The Combat Support Boat

The Fairey Allday Marine Ltd CSB by John Norris

Across the centuries armies have shown time and again how they have often found themselves requiring the services of small boats. This was never more aptly demonstrated than by the Allied armies during the Second World War as they were faced with prospect of crossing the many rivers as they advanced towards Germany.

In post-war years armies around the world continued to demand small boats for operations. One of those armies was the British army which conducted operations in locations which required such watercraft. In the mid-1970s, the Military Vehicles and Engineering Establishment at Christchurch in Dorset, outlined a design requirement for a versatile craft with a shallow draught capable of operating as a diving support boat, ship-to-shore supply craft and to conduct patrols of inland waterways.

The British company of Fairey Allday Marine Ltd responded to the request and in 1975 submitted a design for such a boat which would become the Combat Support Boat. It sparked interest and in 1977 the first prototype of the eight metre-length craft was ready for trials. These were conducted on the River Rhine in Germany where conditions would test the boat design to the extreme. The trials were successfully concluded, leading to a pre-production model of the boat being ordered for further trials, which was an encouraging indicator.

The pre-production model was prepared and delivered in May 1979 and further trials

were conducted. These too were successful and only served to confirm what was already known about the viability of the boat's design. In 1980 an order was placed for 58 boats, which by now were being referred to as Combat Support Boats (CSB), which would be operated only by units of the Royal Engineers. Later in the same year Fairey was able to make delivery of the first boat with the remainder following soon after.

The hull of the CSB was an all-aluminium design measuring 8.2m in length, 2.79m in height to the top of the cockpit cabin which housed the controls. Beam width was 2.5m and total weight was 4,080kg. Power was provided by twin Sabre 212 turbo-charged marine diesel engines developing 180hp, which powered twin Dowty 300mm two-stage water jets to give the CSB speeds up to 40km/h. However, when carrying capacity loads up to 2,000kgs speed was affected and reduced to 30km/h.

Using water-jets as propulsion eliminated the need for propellers, thereby allowing the CSB to operate in very shallow water without the threat of becoming fouled. Operated by two men the CSB could carry an infantry section for river crossing operations or to land special forces along a coastline. Its versatility and handling qualities made the design



ABOVE: Good handling in open water meant the CSB was perfect as a diver support platform.

BELOW: A CSB is shown here being launched into a waterway from its transport trailer by a Combat Engineer Tractor.





ABOVE: Its rugged designs and manoeuvrability made it perfect for combat engineers in the construction of bridges.



ABOVE: The US Army was impressed by the CSB design and developed a modified version known as the 'Bridge Erection Boat'.

equally suitable for operating in deep water as well as harbours.

While its intended function had been clearly defined very early in its design stage, the CSB proved itself capable of operating in other roles. For example, diver support boat and transporting supplies. With buffers fitted to the bows it could be used to nudge pontoon sections into position for river crossings. Whilst never intended to carry fixed armament, temporary mountings could be fitted to allow light machine guns to be carried for self-defence or provide fire support. One unusual function saw the CSB being fitted mine dispensing systems such as the Ranger which could project anti-personnel mines along river embankments to prevent incursion by an enemy force.

This was a feasibility study, rather than a standard feature, which proved the versatility of the CSBs ability to be used in a wide range of roles. Patrolling harbours for security duties led to searchlights being fitted, proving its usefulness to civilian organisations such as border control and customs. The CSB was an all-round workhorse capable of undertaking a wide range of duties to support combat engineering roles. This versatility could also be extended to civilian duties if needed.

In 1982, during the Falklands War, the British Task Force deployed an extensive range of weaponry and equipment to complete the liberation of the Falkland Islands following the invasion by Argentina. Much of this equipment was carried on board the container ship the Atlantic Conveyor, which was serving as the

The CSB proving its adaptability by demonstrating how it could be used as a platform from which to launch mines onto river embankments.



logistics supply vessel. During the operation the ship was attacked and sunk by Argentine aircraft which, along with considerable loss of life, meant the loss of much heavy equipment including aircraft along with several CSBs which would have been useful for operating in shallow coastal waters around the islands.

After the war an order was placed for the replacement of these boats and interest was also shown in the design by several overseas armies, including Turkey, Greece and South Korea. Fairey Allday would eventually supply around 1,000 CSBs for those armies. The US Army was sufficiently impressed by the CSB design that it developed a much-modified version for service with its engineering units, referring to it as the 'Bridge Erection Boat'. Today, forty years after being introduced into service, the CSB is still operational, although in a much-changed design having been modified and improved to keep pace with evolving roles. Its presence reaffirms the need by armies for such small but very useful watercraft. Models of the CSB are available, such as the 1/72 scale kits produced by S&S Models (www.sandsmodels.com). This allows dioramas to be constructed with an unusual added dimension.

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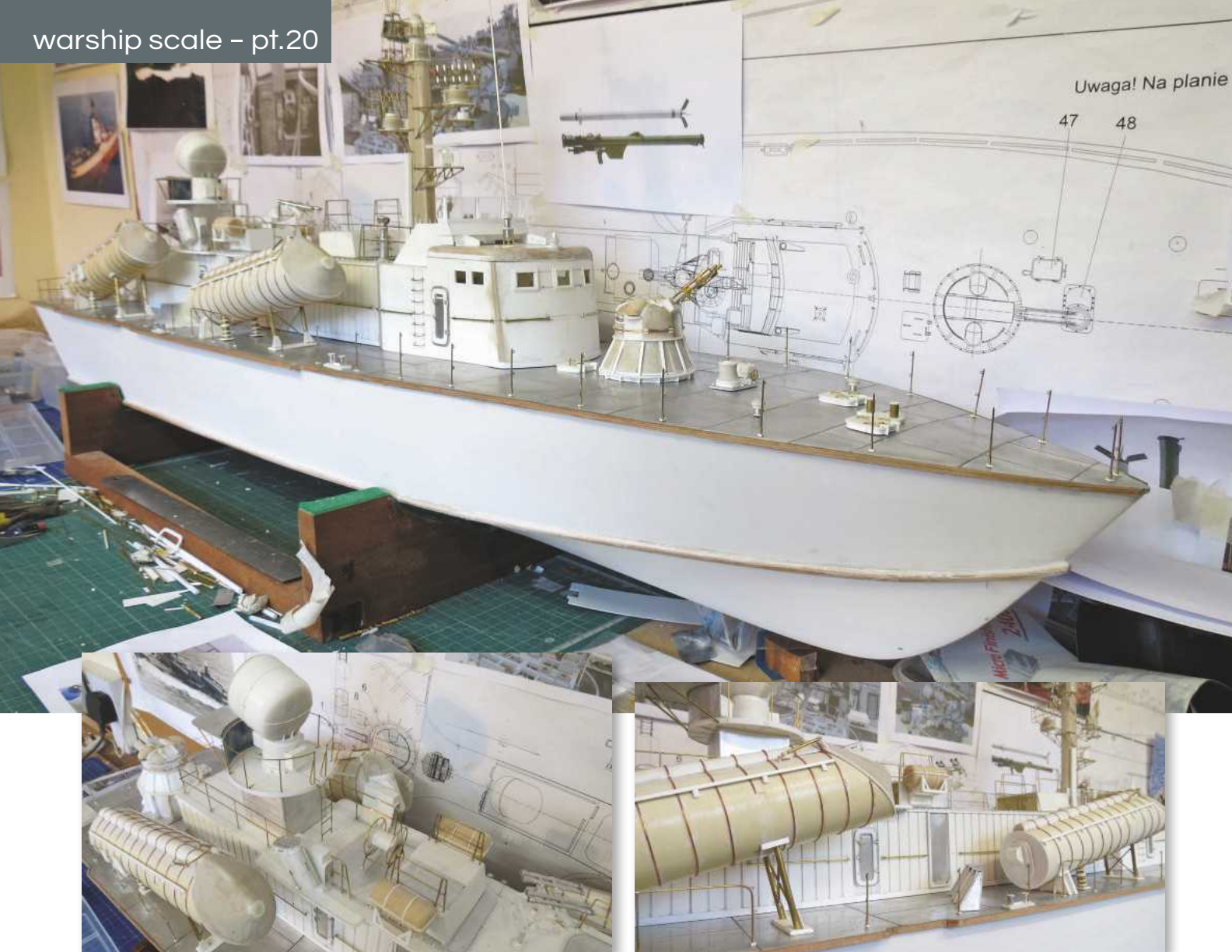
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OSA 2 Fast Missile Boat

Dave Wooley guides us through the airbrushing of the hull and deck of his OSA 2

Before we continue I thought it would be interesting to take a reflective look at the OSA assembled prior to painting, as much of the material used in the build thus far will be covered by paint. With the hull receiving its primary colour, the next task is to mark out the positioning of the WL (Water Line). Being a planning hull form, the method adopted differs slightly from that used on a displacement hull form. For those that have followed previous builds, the method used involved the simple expedient of an 'L' section with a pencil fixed at a predetermined height and gradually marking points along the length of the hull.

ABOVE: A dry run. The unpainted OSA boat with most of the fittings in place.

Determining the water line

For fixing the level of the WL on the OSA, I used the plan profile to determine the fore and aft depth of the WL, taking a fine thread and securing it to the transom with Low Tak tape on the after mark. The loose end of the thread was then secured to the forward mark, taking care that the spray rail does not distort the level. Once satisfied that all is true (even though the WL appears much deeper aft than forward), evenly spaced marks can then be made along the length of the thread as in **Photo 1**. These will be used to determine the position of the WL on



to which a length of Low Tak tape can be fitted. Low Tak is ideal as standard masking tape can damage a newly painted surface when peeled clear. Standard masking tape is used to hold the covering in place and is taped onto the Low Tak as in **Photo 2**.

Airbrushing the anti-foul

Last month I made mention of the lever action side cup airbrush which is ideal for applying paint to large areas such as the underside of hull. Another notable point is the selection of paint. In previous builds, and especially for the anti-foul, my paint of choice has been the wine colour Humbrol 73. However, in recent years I've become a fan of acrylic paints, as they are easy to apply, have a good coverage and water can be used to help flush the airbrush after use (there are specialist cleaning agents which can be used in conjunction with water to ensure that all paint is removed from the airbrush). For the OSA the overall grey paint used was Tamiya XF-19. The anti-foul or hull red, which is towards the brown red spectrum, was recommended for the Merit 1/72 OSA2 kit as is Mr Hobby Rotbraun (H460). The result after two applications can be seen in **Photo 3 & 4**. One tip, which may seem self-evident to most modellers, when removing the Low Tak tape and produce a sharp finish line, is to peel the tape clear at a slight angle from the freshly airbrushed edging.

Steel deck

As the plate lines on the deck are just a faint impression as a deck weld which would be seen on the OSA. As mentioned in a previous issue the weld line is simulated using P38 fillers and is less than .50 of a thickness. Thus, preparation for the airbrushing of the deck with Mr Hobby paint called for a finer grade of Micro Finishing Cloth to ensure a good surface, but not disturbing the fine weld lines (**Photo 5**). The various holes dotted around the deck are key points for fitting hatches and cable handling equipment and are made prior to the model receiving its primer coat (**Photo 6**).



2: Preparing the hull by masking off with Tamiya Low Tak tape.



3: The hull is placed keel up and the brown-red acrylic anti-foul is applied in two consecutive coats.



4: All the masking off is removed to give a sharp edge between the anti-foul and the side of the hull.



5: Micro Finishing cloth 4000 grade is used to prepare the deck surface for its finishing coat. 6: The primed deck surface is rubbed down with a Micro finishing cloth.





7: Masking of the lower part of the hull using a combination of Tamiya Low Tak and conventional masking tape.



8: Mr Hobby deck red surface immediately after airbrushing.



9: Here the weld lines between deck plates are only just visible as intended. 10: All the masking paper is removed, and the elongated superstructure added. We are making progress.



Finishing coat

Once again, careful masking off really does pay dividends. Demonstrated here, the lower part of the hull (now finished) is covered over using the same method as that applied to the WL (**Photo 7**). As the deck is an uninterrupted area the lever action airbrush with the larger of the two paint cups using Mr Hobby H460 diluted 70-30 ratio of paint to thinners. The airbrush was set to a wider angle applying the spray at approximately 350mm from the deck starting from the deck edge in a continuous right to left, left to right and so on avoiding too much of an overlap. **Photos 8 & 9** show the surface immediately after airbrushing, although the Acrylic paint dries quickly, like all paints it takes longer to harden.

The following day after airbrushing the deck, the elongated superstructure with some of the fittings were added. This demonstration adds to the basic feeling of progress and getting nearer to the final goal (**Photo 10**).

You may be forgiven in assuming that when it comes to airbrushing a boat model, an airbrush is just an airbrush. Yet there are many varying types, all of course are designed for a single purpose. The opportunity arose to try one such brush, the Procon-Boy FWA double action from Mr Hobby. Apart from the usual double actions of press down on the button for air and drawing the button back for spraying there is a third action below the cup which is an air adjustment screw. This is helpful when using metallic colours, quick drying paint and other paint characteristics by simply controlling only the air flow, no pressure adjustment is required (**Photo 11**).

Fittings

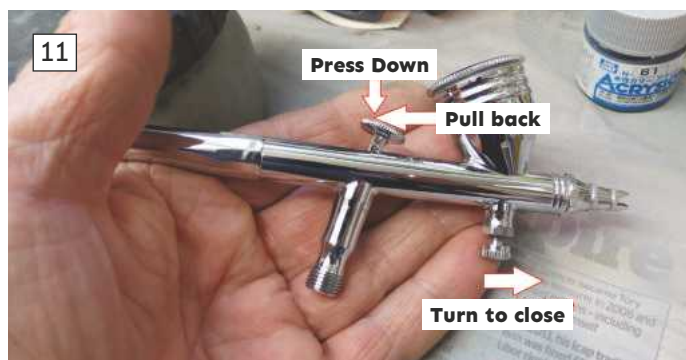
Moving back to the OSA, the various fittings located within the upper bridge (now airbrushed) can be fixed into place (**Photo 12**), once again there are small locating pins attached to the fittings so avoiding the problem of cyanoacry seeping under the fitting.

For a fitting such as the AK230 deck guns, a slightly finer setting was made on the airbrush so as the air/paint combination would allow the airbrush to get closer to various under cuts when applying the spray (**Photo 13**).

For most other fittings, these where either fitted to a length of timber or as shown here to an old revolving cake stand which has proven it worth many times and you can spray in a fixed position but turn the table or move the table and the airbrush to where it is required. I prefer to do both making sure the spray gets into those undercuts (**Photo 14**).

A jig for airbrushing chain

Over the years I, like many others, have adopted some method to paint or airbrush chain. When it came to the OSA a decision was made that it would be much easier and more efficient if the chain could be kept reasonably taught but completely exposed. The answer was this simple but effective jig with a slot in the centre which



11: New; the Procon-Boy FWA double action Platinum 0.2 airbrush from Japan. 12: Fixing into place all the finished interior detail for the bridge.

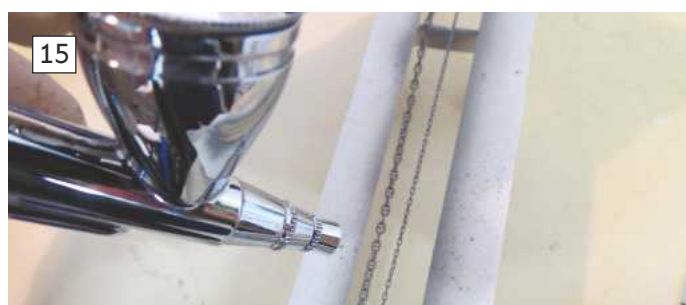


13: One of two completed AK230 machine gun mountings.

14: Airbrushing some of the fittings on a revolving cake stand.

15: A simple and effective method for airbrushing chain of various size links.

16: Carefully masking over a difficult fitting.



17: Getting very close in on this OSA anchor using a fine cone of spray. 18: Mr Hobby as well as marketing fine quality paint also produce dedicated cleaning fluids.

could handle more than one type of chain at the same time. The chain is placed over the slot and taped at each end (**Photo 15**). Airbrushing can be undertaken either with the jig on a flat surface or lifting clear.

Drum Tilt radar

Airbrushing more challenging fittings such as this Drum Tiltfire control radar. Here all the attached boxes and small fittings are covered over to allow the airbrushing in white the front cover of the radar housing. As it is circular Tamiya Low Tak tape comes into its own as the fine line between the cover and the drum had to be exposed accurately (**Photo 16**).

Small anchor

The Anchor which is specific to the OSA boats was airbrushed with Tamiya flat black (XF-1). Once again in order to get complete coverage it became necessary to get the airbrush in close and producing a very fine cone of spray by turning the needle stopper (at the tail end of the airbrush) anti-clockwise.

For those of you who are well acquainted with the nuances of airbrushing, what I am about to repeat is a well-known mantra. Never neglect cleaning the airbrush thoroughly. I really can't overstate this especially when using Acrylic paints as they set faster than enamel and are more likely to accrue a build up around the needle. Apart from these small

pointers, I was able to airbrush most of the OSA in two sessions (**Photo 18**).

Next month – Adding more airbrushed fittings to the model including the stanchions, rails, missile tubes and navigation lighting. ●

References and Acknowledgements

Fine brass tube, wire, Mr Hobby paints and Micro Cloth ref- Albion Alloys
www.albionhobbies.com

Lever action/side cup airbrush ref -The Airbrush Company www.Airbrushes.com

A GRP hull of the OSA2 is available from MTB Hulls www.mtbhulls.co.uk



Sunny A3 Tug Boat

Keil Kraft-inspired design
by **Ray Wood**

The latest design inspired by the Keil Kraft EeZebilt range from the 1960s is a tug boat to mirror Otter in the range, using the side profile of the very popular and classic Sun XXI tug as a basis, I have kept the depth of the hull as a displacement hull rather than the shallow draft single chine layout of Otter, at 15in length, Sunny is 4in longer and an additional 1in on the beam than the scale version.

The power train is a very cheap Mabuchi type brushed motor from a redundant/broken RC car the grandsons produce at an alarming rate or a broken electric toothbrush, a silicone fuel tubing coupling being a good push fit on the expensive commercial 4mm prop shaft and tube, I seem to recall the original EeZebilts had a simple rod and brass tube with a tinplate propeller soldered on the end. The prop is plastic salvaged from a Revell corvette. I'm trying to keep this build at a

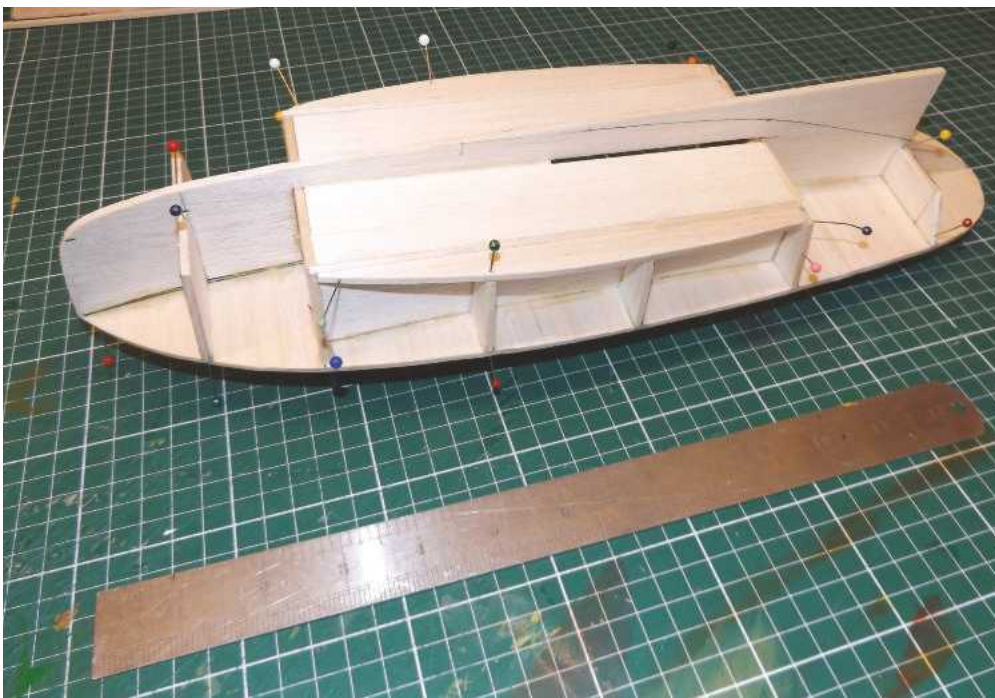
pocket money level so I have used a simple micro switch for on-off operation, saving £25 in the process.

Hull Construction

The original Keil Kraft design ethos of building a box with the shape of the hull being added

to the outside is copied, with a central keel and formers/bulkheads to create a base for the sides with 1/2in balsa base, which with vertical grained 1/16in sheet sides gives good scope for carving a good representation of the actual hull shape, the bulwarks project above the 1/8in deck as it's such a feature of a real tug merging into a carve section of





soft 3/8in balsa above the deck level at the stern. The knuckle rubbing strip is 1/16in x 3/32in balsa strip, which can be omitted if not desired. The alternative construction method to this would be bread and butter laminations of 1/2in balsa, but we may end up with Bustler designed by Vic Smeed back in the 1960's he used a shallow draft hull which didn't

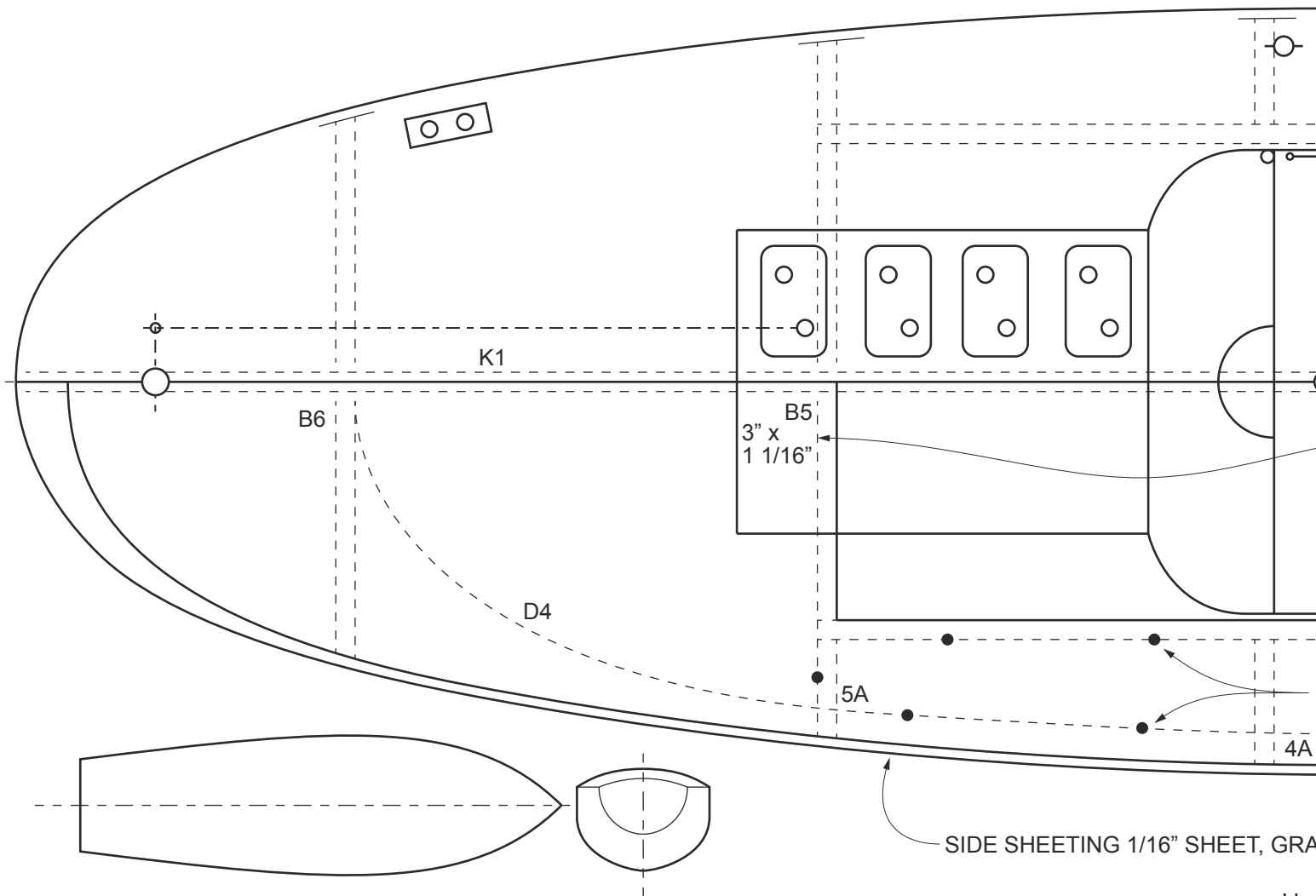
need to carry ballast, but as we have radio gear to accommodate some ballast maybe required to achieve the correct waterline. The rudder is fabricated from brass plate, rod and tube mounted very close to the stern, so hiding the tiller would be difficult, the micro steering servo is mounted under the rear superstructure with a brass rod to the tiller.

Superstructure

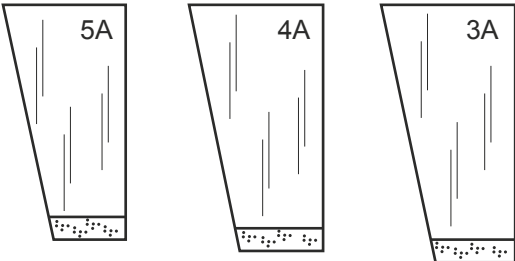
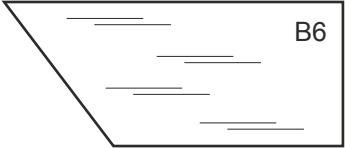
The upper superstructure is constructed on the main hatch cover from 1/8in balsa for the lower deckhouse with soft block to achieve the curves under the bridge at the front and 1/32in plywood boat deck and up again for the wheelhouse in balsa with the ply roof, the wrap round screens which are such a feature of the Sun tugs are 1/64in ply, but card could equally be used. Details such as the tow hook and railings are a matter of how far you want to go, masts are from 1/8in doweling sanded to a taper, The funnel is 1/2in balsa carved and sanded to shape, the whole model has two coats of sanding sealer to seal the grain rubbing down between coats, then sprayed with red oxide primer for the hull and grey primer for the superstructure as some of it will be painted white. The superstructure is a buff colour, with matt dark green decks, all paints are Humbrol oil based enamels.

Motive Power Department and Radio Installation

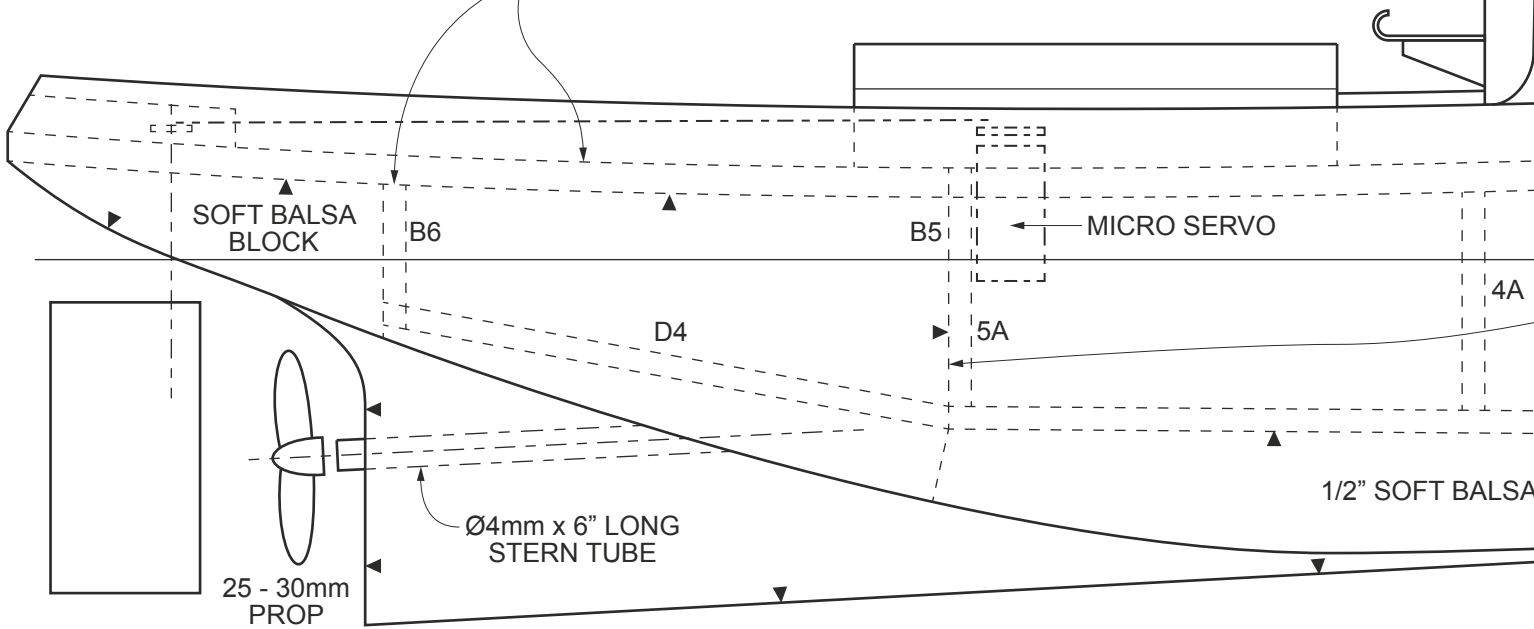
As I'm doing this one 'on the cheap' I find electric tooth brushes are a great source of small motors which run on 1.5v, once the battery has failed they are generally thrown away, so put the word out to your family! If not, many small motors are available, we don't need to much power to push this little boat along and in the same vain the motor control will be 'on' or 'off' via a micro switch and second micro servo, still cheaper than

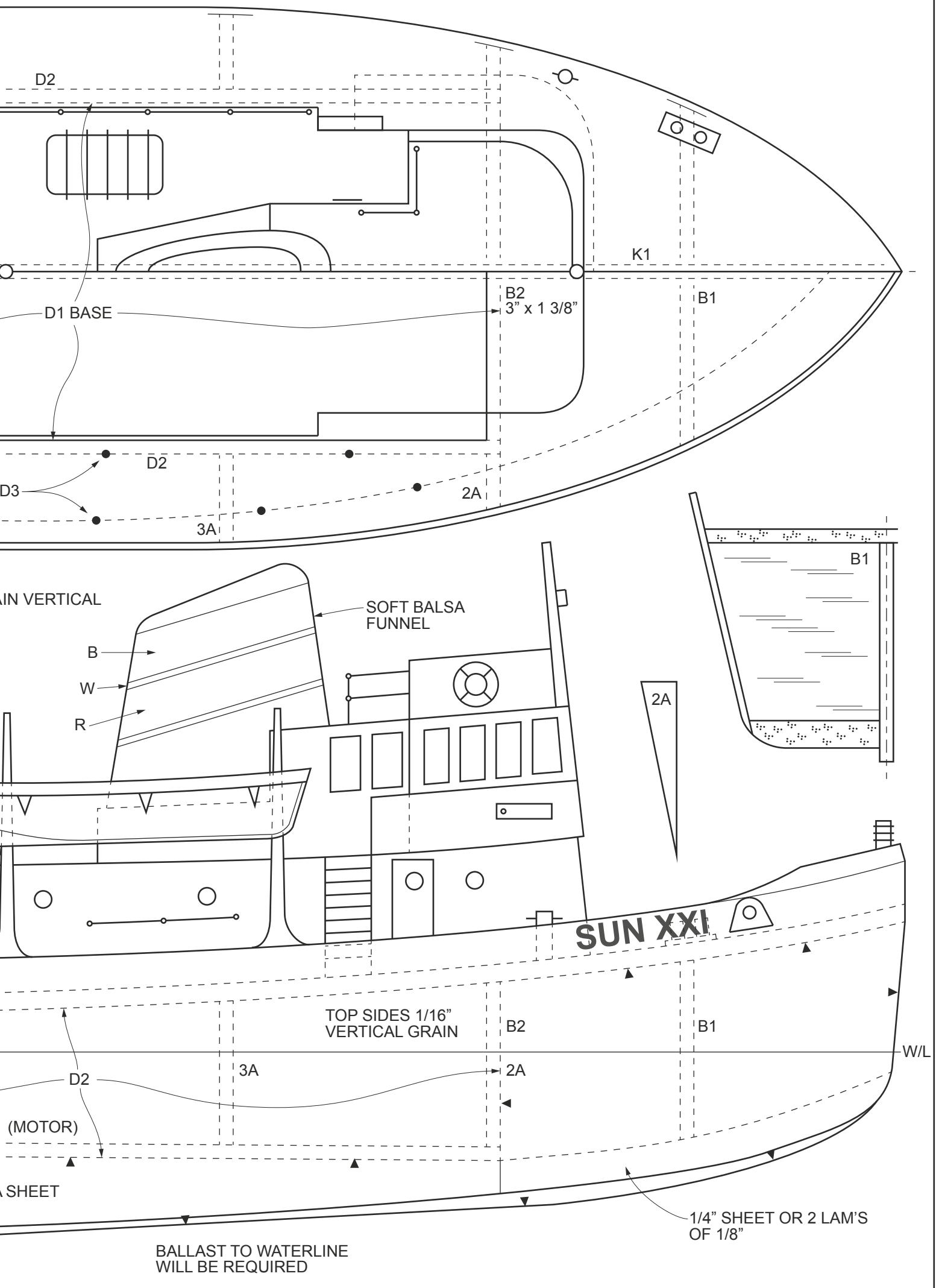


SUNNY A3 SIZE TUG BASED ON 'SUN XXI' SCALE 1:72



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a commercial speed controller, but if you flush the 10A Mtronics unit will do nicely. The motor is connected to the drive shaft and propeller by silicone fuel tubing, simple but effective. The model will need to be ballasted down to the correct waterline with some small weights once you have chosen your power supply batteries, in my case one sub C size rechargeable wired to give 1.5v, remember the more batteries the less ballast we will need, but not more volts. You will need a separate NiCad battery to power the receiver, the all up weight is 1½ lbs ready to go.

Testing and Sea Trials

The usual indoor test tank i.e. the bath is an ideal test ground for this little model to see if everything works as it should with ballast added achieve the scale waterline. Sea trials were carried out at my home club at the Bluewater Shopping Centre, The Chantry club have excellent facilities, Sunny caused quite a stir when diminutive form rounded the jetty to the delight of the assembled 'Tug Men' and was met with instant approval and many positive comments of I must build one of those, so mission accomplished in my book!

I would also like to thank Adrian Larkin owner of Allington Marina near Maidstone for the use of his basin and for the photos taken by Graham Ashby in his usual excellent style. ●







Wandering Star by Phil Goddard and Alan Knight, winner of the Best in Show award.

CADMA 2018



Model Boat Show report by Gareth Jones

The Conisborough and District Modelling Association show took place at the beginning of June in its usual venue at the Doncaster Deaf Trust. One unusual aspect of this year's show was that the main hall ceiling was bedecked with what seemed like acres of net curtaining, presumably because the hall was prepared to be used as a wedding venue. This gave the impression that the show was being held in a large tent, but that aside, all the usual features of the show could be found. A large number of club displays were supported by a variety of kit and accessory suppliers, an outdoor pond and a large bring and buy stand.

ABOVE LEFT: A well-weathered fishing boat on the Nottingham MBC stand. ABOVE RIGHT: The steam launch Borkum on the Kirklees MBC stand. BELOW: A scratch built Police boat by Roy Whitton on the Balne Moor MBC stand.





ABOVE: TOT by Ishmael Ibrahim-Holland of Goole MBC who won a junior prize for its construction.



ABOVE: A collection of Marblehead designs spanning 50 years of development of the class on the Vintage Model Yacht Group stand.



LEFT: A very elegant model of the paddle steamer Phoenix, which I think was from the Roker Park club (but I may be wrong).

Winners of the prize for the best stand were the Roker Park club, who are regular attendees at the show and always put on a varied display of well-constructed model boats, including some excellent lifeboats.

The best model in show award was an unusual subject by Phil Goddard and Alan Knight of Nottingham MBC. This was a double-ended Hong Kong Star Ferry named Wandering Star, scratch built without the aid of any plans, from a collection of holiday photos and internet information.

There were two awards made to junior competitors. Layton Pitman was awarded a prize for his work in assisting his grandfather in the construction and painting of the tug Gribbin Head on the CADMA stand. Ishmael Ibrahim-Holland was also awarded a prize for his construction of the tugboat TOT kit on the Goole MBC stand.

Over the last couple of years a number of model boat shows have fallen by the wayside, apparently because of lack of support from clubs, traders, the venue or the general public. The CADMA show faces competition from the model engineering show held at the Doncaster racecourse only a few weeks earlier in the year. It is noticeable that model boat club participation at the model engineering show has fallen significantly in recent years and I got the impression that the visitor numbers at this year's CADMA show were somewhat lower than in the past. However, the CADMA show provides a good opportunity for model boat constructors to show off their skills and is still supported by a large number of clubs from the midlands and north of England. Following the rejuvenation of the model show at Blackpool it is hoped that the CADMA show can also continue to prosper and give model boat enthusiasts the opportunity to exhibit their craft and meet likeminded modellers to discuss their projects and exchange ideas. ●



ABOVE: Seaforth Conqueror, model still under construction by Bob Hodgson.



ABOVE: A pristine model of River Queen on the CADMA stand.

RIGHT: Pepperami, an unusual subject on the Nottingham MBC stand.



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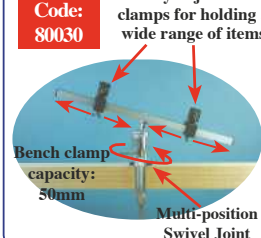
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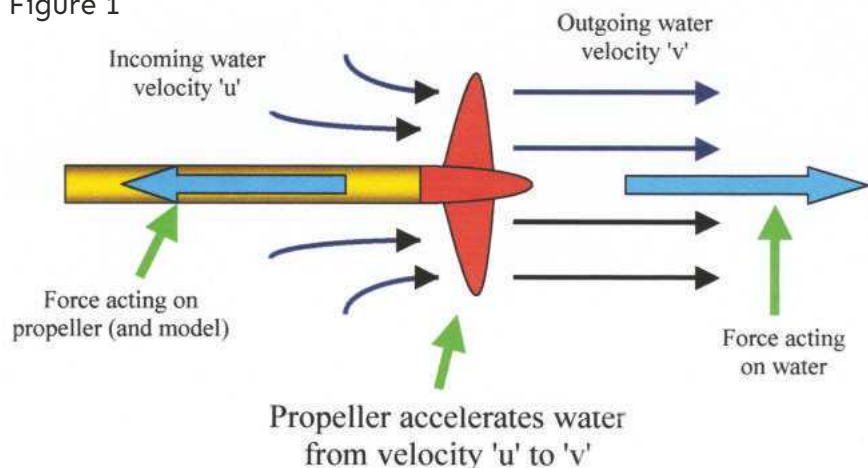
MOORING POST



Glynn Guest with advice and tips for modellers

Showing your slip?

Figure 1



Propellers are a vital part of this hobby, yet they are often one of the least understood items, as witnessed by the regular pleas for advice on what to use with a specific motor/model combination. This lack of understanding is often further illustrated by the varied and sometimes dubious advice given.

Experience wins - sort of?

In the full size world of Naval Architecture, they have the luxury of specific performance requirements, reliable experimental testing and data, plus a wealth of experience based on previous vessels, but with model boats we are rarely so lucky.

When asked about the performance required, the response is rarely numerical and usually limited to 'something that looks about right' or 'not too fast, but not too slow'. It is perhaps fortunate that displacement models have a natural or comfortable speed range. Any attempts to sail faster than this requires astronomical increases in power with the attendant problems of reduced duration and motors overheating. An overpowered displacement hull will also show poor sailing

qualities and may become dangerously unstable. Most modellers appear to settle for 'it looks about right and sails okay', which is very pragmatic and sensible.

This has resulted in modellers being able to compensate for any lack of theoretical knowledge and understanding with experience based on practical results. This is a great resource which can be shared with fellow modellers to the benefit of all. The problem can be when people try to use the information and ideas gleaned on one specific type and size of model to something quite different. What works for say, a large model of a harbour tug might be totally wrong for a small warship or an ocean liner.

How?

If you ask people how propellers work, you sometimes get different explanations. The propeller blades can be regarded like the wings of an aircraft (aerofoil) in that the fluid passing around them creates regions of low and high pressure on their front and rear surfaces to create the driving forces. This is perhaps a more complex idea than we

modellers usually need and the momentum theory is perhaps easier. In this case, water entering the propeller disc is accelerated, **Figure 1**. If you can remember Newton's Laws of Motion from school science lessons, then to accelerate the water requires a force to be exerted on it by the propeller. This force, in turn generates an equal but opposite acting reaction force on the propeller (Newton's famous Third Law), which is what pushes the boat forward.

It is not just the change in velocity that governs the propeller thrust, but also the amount of water that is accelerated per second. This is why the term 'Momentum' is used when:

Momentum = Mass x Velocity

Thus, you could create the same propeller thrust by giving a large mass of water a small acceleration, or giving a small mass of water a large acceleration, which is a very useful idea that we will come back to again.

A little knowledge

We can now consider three things that affect the performance of a propeller. That is the pitch, diameter and rotational speed. Notice that I have not mentioned the number of blades or their shape as these will also affect the model, but getting the other three things right ought to be our first priority. They will, as our American cousins say, 'get us in the right ballpark', after which we can refine the propeller to get exactly what we want.

Pitch

The pitch of a propeller is the distance one revolution should theoretically advance it. A good analogy can be made with screws or bolts, in that each complete revolution will move it axially by the same amount, **Figure 2**. The angles at which the blades make to the plane perpendicular to the propellers disc create the pitch. A small angle creates a small

Figure 2

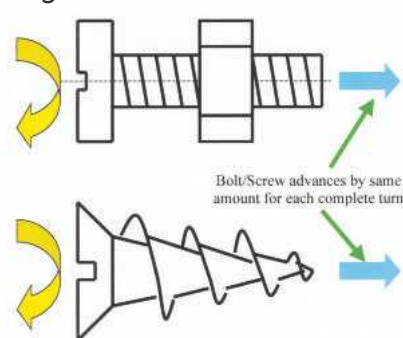
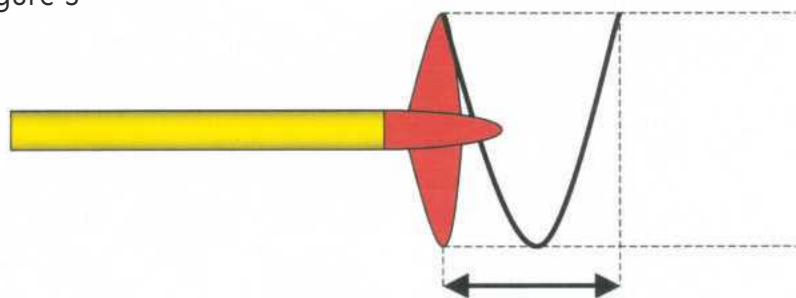
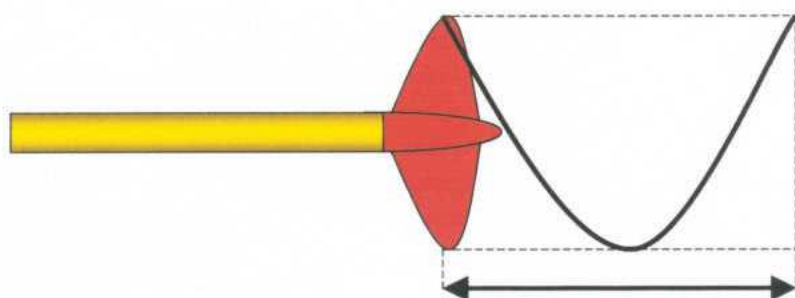


Figure 3



Shallow blade angle = small pitch



Large blade angle = large pitch

often termed 'Direct Drive'. The inclusion of gears or pulleys will allow motors and propellers to run at fixed, but different speeds. This is particularly useful if an otherwise ideal motor want to run at a speed that does not match the propeller you would like to use.

Speed calculations

Considering what we have covered so far, it ought to be clear that a model's top speed should be found by multiplying the propeller(s) pitch by the rotational speed.

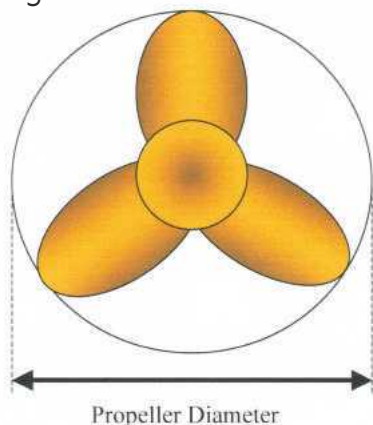
$$\text{Model Speed} = \text{Propeller Pitch} \times \text{Rotational Speed}$$

However, and there is always a 'however' in this hobby, propellers do not have 100% grip in the water, unlike the bolts/screws we have used to explain the idea of pitch. One revolution of the propeller will drive the model less than the pitch distance forward and this is termed Slip as in **Figure 5**.

This sounds like a bad thing, but if you think about it, can be rather useful. With zero slip, the propeller would in effect be freewheeling through the water and the motor would be doing nothing to drive the model along. Even with total slip, which is when the model fails to move at all, a propeller will still produce thrust. If this were not the case, then our models, and the full size vessels, would not be able to accelerate from rest. If anyone doubts that a fully slipping propeller can create a lot of thrust then they should hold on to the stern of a fast electric model which features surface drive. Switching on full power will generate a significant force and drench them with water just to reinforce the fact!

The value of slip is often quoted as a percentage of the theoretical pitch value. Thus, a slip of 25% means that it will actually move forward by 75% of the pitch with each revolution of the propeller. This means that the formula has to be modified:

Figure 4



Propeller Diameter

Rotational Speed

The rotational speed of a propeller is the number of revolutions that it makes in a fixed time. It may be traditional to quote motor speeds in RPM (Revolutions per Minute) but with our propellers, RPS (Revolutions per Second) often makes for simpler calculations and just remember that one RPS equals sixty RPM.

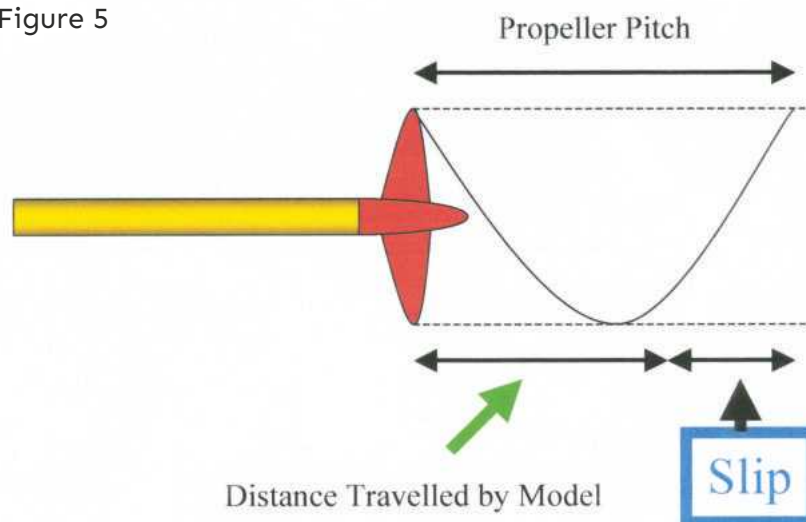
The propeller's speed will only match the motor's speed if they are directly connected,

pitch, which is one revolution of the propeller advances by a small amount; naturally a larger angle increases the propeller's pitch, **Figure 3**.

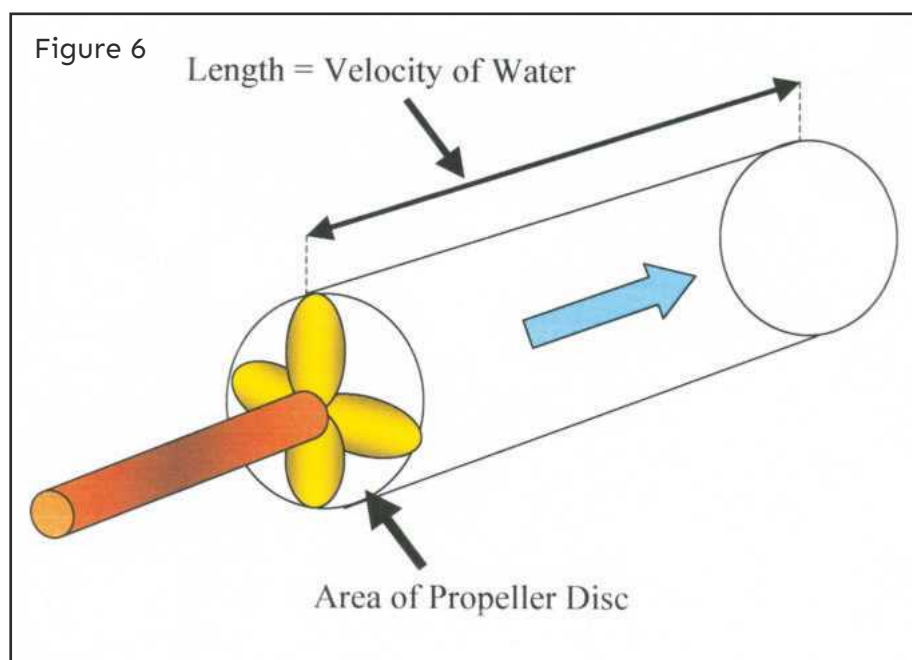
Diameter

The diameter of a propeller is the diameter of the circle which the blades sweep out whilst rotating. It is twice the distance from the axis of the propeller to a blade tip, **Figure 4**. It does not matter how many blades there are, the diameter is fixed and yes, even with a single blade, the diameter would still be the same.

Figure 5



Distance Travelled by Model



Model Speed = (Pitch - Slip) x Rotational Speed

Exactly how big this slip is depends on many things. A poor design of propeller, perhaps with thick blunt blades, could create a large amount of slip. A model with a large hull resistance, thus preventing it from reaching high speeds, would encourage slip. Lacking any sophisticated testing equipment we modellers are more or less forced to guess the value of slip and test it against our practical experiences. This is perhaps no bad thing as you tend to learn from mistakes. I've had to change my ideas when trying to predict the performance of models moved by paddles rather than propellers.

A calculation or two

Using the example of a slim destroyer type of model built to a scale of around 1:100, this might require a top speed of 1.2metres/sec (120cm/s) and use propellers with a pitch of 2.5cm. Destroyer types of hull are designed to slide through the water with a minimum of resistance, so the slip value would not be large. My experience suggests that something between 10 and 25% would be right, so let's settle for 20%. For each revolution of the propeller, the slip is 20% of 2.5cm, in other words 0.5cm. Rearranging the formula gives:

Rotational Speed = Model speed/(Pitch - Slip)

Substituting the numbers in gives:

Rotational Speed = 120/ (2.5 - 0.5)

Which gives us a value of 60 RPS or if you prefer, 3600rpm for the propeller speed. Again using past experience we ought to be looking

for an electric motor that has a free running speed (its speed with no load applied) about one third greater than this value, i.e. about 4800rpm. Operating a motor at around 75% of its free running speed usually allows it to develop a good level of power, yet still keeps it in the high efficiency range. That is, it makes best use of the electrical energy rather than converting too much of it into heat, something which many try to do!

Moving to a slower model, such as a tug which needs a top speed of 60cm/sec and a propeller pitch value of 3cm, the slip value is likely to be much higher now as these hulls are quite bluff and manage to push a lot of water about when moving at speed. I would probably settle for something like 50% slip. Feeding these values into the formula gives:

Rotational Speed = 60/ (3 - 1.5)

Which gives us a value of 40 RPS or 2400rpm for the propeller speed, so, now it's just a case of finding a motor which can develop the right amount of power at this speed. Slight differences between this ideal speed and the motor speed might not cause any serious problems. If the motor runs a little too fast then its speed can be tamed by judicious use of the speed controller. In fact, many modellers prefer to apply a little too much power as a precaution against unforeseen emergencies when sailing, such as an out of control monster bearing down on their pride and joy. Under-powering a model slightly will only have a small effect on its top speed and can easily pass unnoticed by everyone.

If the motor runs at a speed that is significantly different from the desired propeller speed, usually much too fast, then some form of speed reduction is a good idea. A suitable gear or pulley ratio could be calculated from these two speeds. This

always seems to be better than using the speed controller to limit the top speed in such a case.

Size matters

The effect of changing the propeller's diameter can often be underestimated. What may appear to be a modest increase can result in a massive rise in the electric current drawn, much to the distress of motors, speed controllers, wiring and batteries.

In what follows I am going to simplify things by assuming that the rotational speed of the propeller is fixed. The diameter of a propeller thus governs the mass of water that is accelerated rearwards and hence the thrust created, in two possible ways.

The water accelerated by the propeller in each second can be assumed to be shape of a cylinder, **Figure 6**. The diameter of this cylinder will match the diameter of the propeller and its length as a result of considering just what happens in each second, will equal the velocity with which the water leaves the propeller. Turning this in to the mass accelerated per second just requires this volume to be multiplied by the density of water.

Mass = Cylinder Volume x Water Density

The cylinder volume depends upon the propeller disc area which in turn depends upon the diameter of the propeller. But, it's not just the value of this diameter that matters, it's the square of the diameter (Area of Circle = $1/4 \pi D^2$).

Thus, doubling the diameter of our propeller would actually increase the mass accelerated per second by a factor of four. A more modest increase in diameter of 50% would still more than double this mass.

The second problem with size can occur if the propellers are part of a range of geometrically identical shapes. That is they are directly scaled up or down from a standard shape. This means that if you double the diameter, then the pitch will also double and so doubles the length of the cylinder, **Figure 7**. This means that rather than just creating a fourfold increase from the propeller disc area alone, there is a further doubling to give a total increase in mass accelerated of some eight times the original value. Thus a modest 25% increase in diameter will almost double the thrust.

What this all means, is that any changes to the diameter of a model's propeller ought to be made in small increments. Unless the model is grossly 'under-propped' to start with, anyone who suggests doubling the propeller's diameter should be regarded with suspicion.

Scale selection time

Exactly how you select the right propeller to start with depends upon the model you are building. With an exact scale model,

the choice is done for you as the size and shape of the propeller is given. The only thing you have to do is decide on the top speed you want, which gives you the rotational speed (allowing for slip) of the propeller. Then it's just a case of picking the right motor to match the speed and power needed and this is where experience with similar models is very handy.

If the motor's power is fine, but the rotational speed is unsuitable, then some form of speed reduction or increase could be used. A good example could be using one of the popular and economical 500 types of motor to drive a fishing boat model around a metre long. On six volts such a motor might want to turn over at 12000rpm or more, but your model only requires something like 3000rpm. The obvious answer is to use a 4:1 reduction drive with gears or pulleys.

Do not forget that the voltage applied to an electric motor can be changed from its normally rated value to affect an increase or decrease in rotational speed, but I am not talking about large increases to the applied voltage as this may result in damage to the motor from overloading. Something like changing the voltage by a volt or two can be a convenient way to alter a motor's performance. Reducing the voltage is safer and I have successfully powered a small, 24in (60cm) long model based on a tramp steamer with a 540 motor taken out of a fast electric model. The trick was to power the motor from a 2v cell which turned this screaming power hungry monster into a gentle pussy cat of a motor.

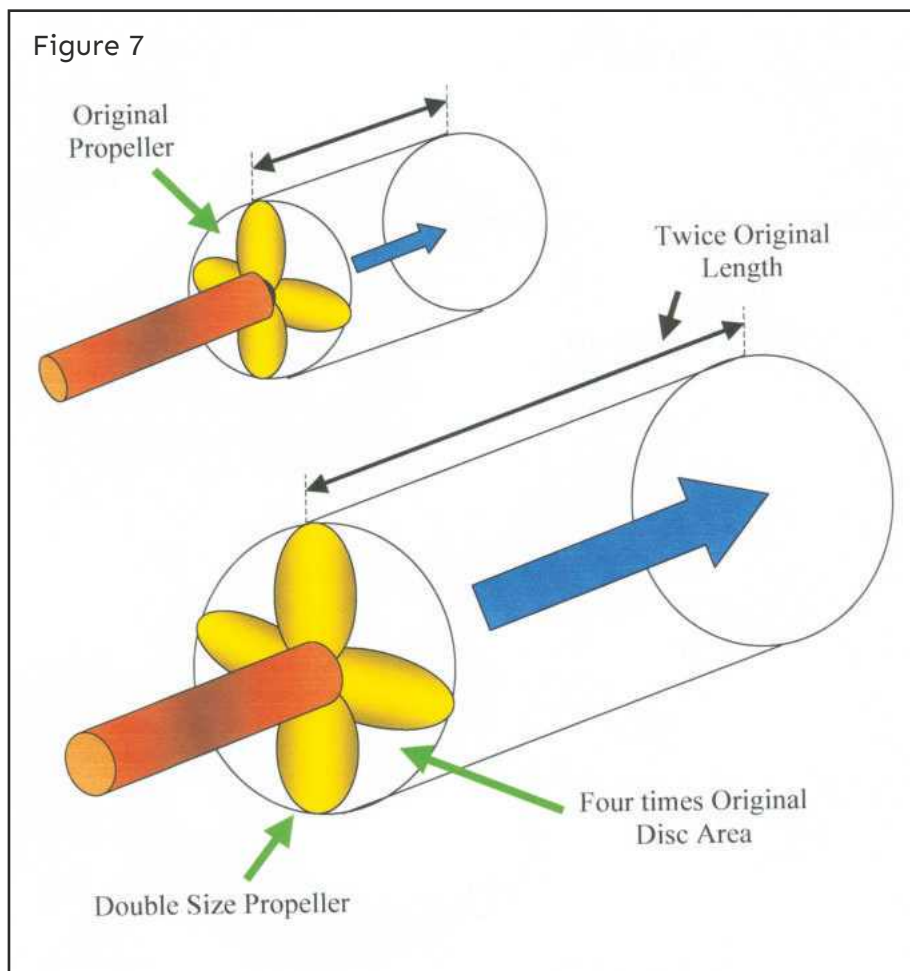
If 100% scale fidelity is not required, then you can play with the pitch and diameter values until the right performance is achieved. Usually slight changes can have the desired effects without significantly detracting from the model's appearance.

Semi-scale freedom

In the semi-scale area we have more flexibility, one common example being to replace multiple propeller installations with a single propeller. This can be justified on the grounds of cost, reliability and if done properly, it can be more efficient.

I usually select the motor that ought to give the desired performance, then the propeller to match that performance and finally try to figure out the right way to join them together. For high speed models, such as slim warships, direct drive of a small diameter propeller can be ideal. This allows the motor to turn over at high speeds, avoiding overloading it, whilst still producing enough thrust for the desired top speed. I suggest the two blade racing propellers that are available from 30mm diameter upwards in 2.5mm steps. Note that there is another range of propellers, often termed X-types, which have a much larger pitch, but rarely match a displacement hull.

Figure 7



With a model based on a tug you have quite a different situation. A small diameter direct drive propeller would work, but is probably not the most effective method to use. It might move the model around at a realistic speed, but lacks the urge if called to actually tow anything. The small diameter, but high speed stream of water that such propellers produce has poor efficiency at low speeds and the slippage is massive.

What is needed is a slower moving stream of water coming off the propeller to raise the efficiency, but to maintain the thrust, a larger diameter of propeller must be used, (remember **Figure 7**). If you want to maintain the same motor speed then this means using finer pitch, larger diameter propeller. For example halving the velocity of the propeller stream means that you would have to double the propeller disc area, i.e. increase the diameter by the square root of 2 ($\sqrt{2}$).

Models based on fast craft, that is ones that need to plane for realism, are another problem area. Their high speed might suggest the use of a high speed motor coupled with a small diameter propeller to prevent overloading. This will work, but it is often a less than optimum solution as witnessed by hot motors and short full speed duration. I've found that it is better to use a lower propeller speed, via

something like a 2:1 gear reduction, which allows a larger and more efficient propeller to be used. This is also one area of scale modelling in which the coarse pitch X-type propellers can be used to advantage.

And in the end?

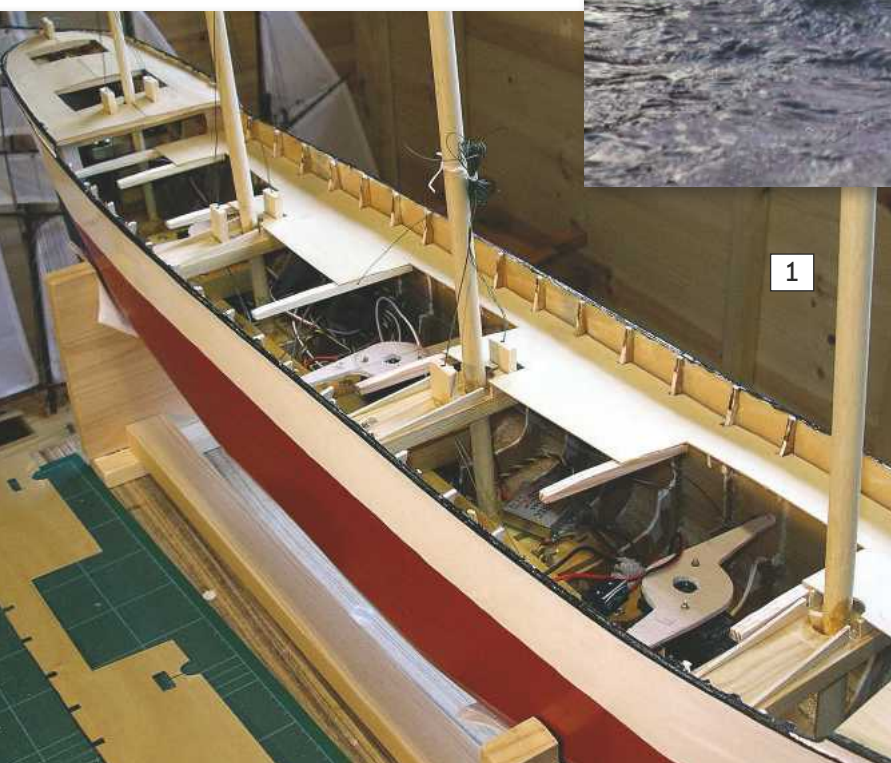
The fact that even the most mismatched combinations of a motor and propeller can make our models move is both an advantage and disadvantage at the same time. The advantage is that having spent some time and effort in building your model, it is very rewarding to see it float and move. The disadvantage is that the ease at which you can make it move can hide the fact that a model's driveline is woefully inefficient. This can lead to a short sailing duration and material damage; hence less satisfaction in what should be a rewarding and stimulating hobby.

Even though I have a good idea of what propellers will suit the latest model, a handful of spare propellers are taken on every maiden voyage. Even if the performance looks 'about right', it is always worth trying a few different propellers just to be sure. Sometimes a small change will reward you with better performance, handling and duration, which always gives you a comfortable feeling. ●

Going Below

Neville Wade

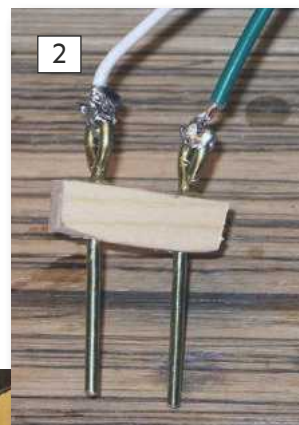
describes how to keep the water above deck rather than below



1: The 'false decks' half fitted to a model of a four-masted barque. The hatch openings can be seen, with some of the strengthening to which coamings will later be glued. Note also the fairleads sticking 20mm through the decks, by each of the after three masts.

2: These are the charging leads from the switch, soldered to brass wire, which will poke through the deck, supported by the wooden block.

3: 'false decks' glued on, coamings with sills fitted, and the charging points fitted in the deck.



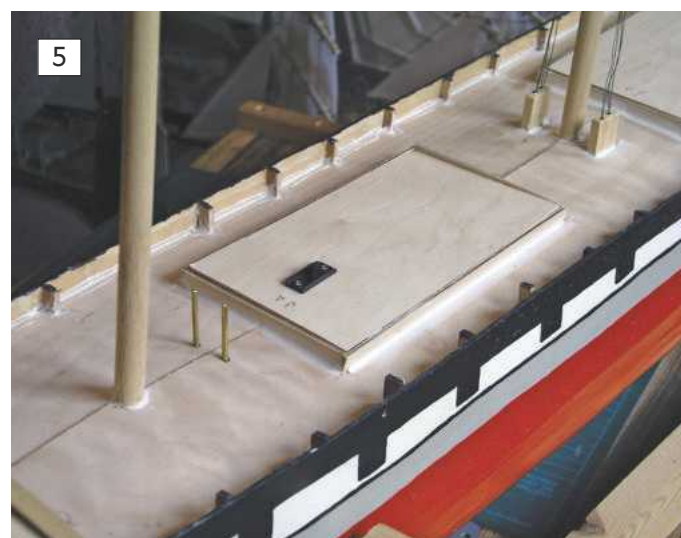
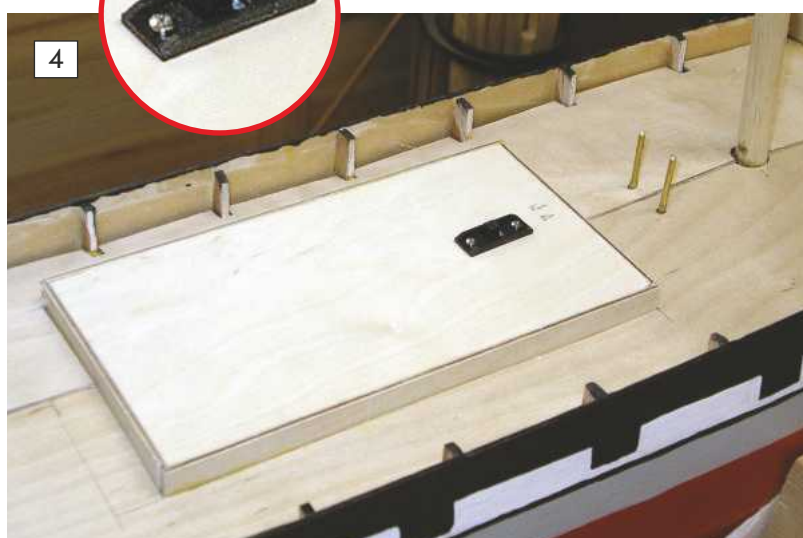
Basic idleness

I like sailing my model boats. I build them to sail, and I enjoy building them, but ultimately I like sailing them most of all. I don't enjoy fault finding, or maintenance, so my challenge has always been to head off as many causes of failure as I can. My boats are all sail powered square-riggers, so I don't have any of the complications so beloved of those who build powered models. There are no motors, speed controllers, sound cards etc. etc. that seem to be an endless source of tinkering, and associated gossip, to so many modellers. Therefore, the main enemy of a quiet life isn't technology, it is environment, more particularly, water. It's self-evident, but real sailing ships were built to sail. For a large vessel, especially that meant built to sail in almost any conditions of wind and sea. The implication for my boats then, is that they should be able to cope with similar, scale, conditions, and that means keeping out the water, so that I only rarely have to go below, and that's the burden of this piece.

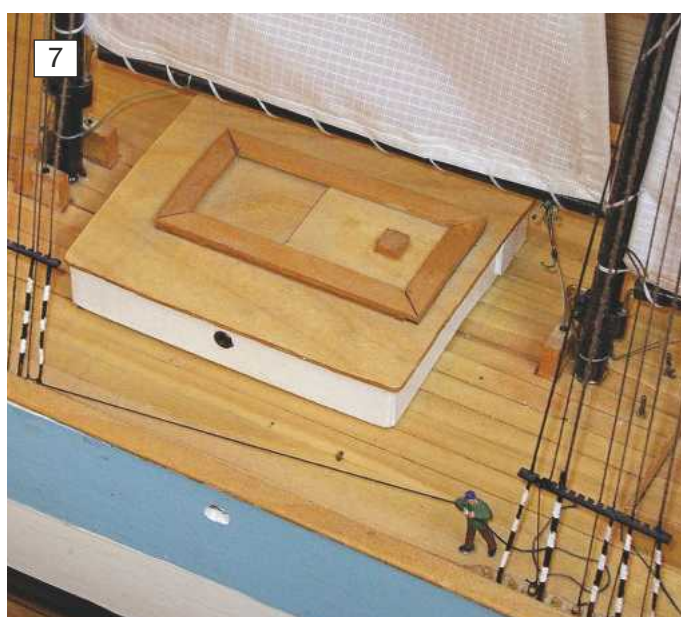
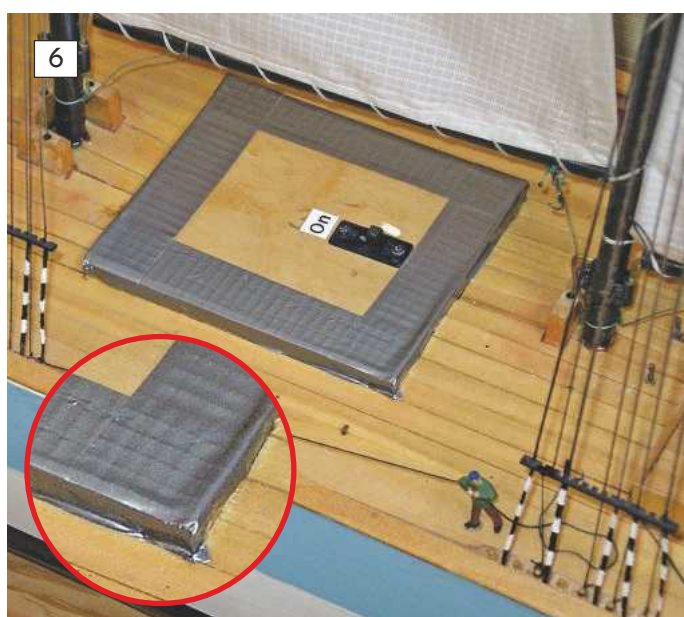
The decks the key

My hulls are all built from plans and made plank on frame. I'm not going to bore you with a description of this technique, we'll take it as a given that the hull itself is watertight and strong. If it wasn't, then any amount of precautions to do with sealing the deck would be a waste of time anyway.

So, we come to the crux of keeping out the water; the deck. In my world the deck is fitted after the hull's made and painted, all the electrics and radio gear have been fitted and connected up, the rudder is on and working and the lower masts and keel bolts are in place (**Photo 1**). I have my own preferences for how the deck is located and glued; they involve



4: 'Inner' hatch cover fitted on the sills, this one carrying the on/off switch. 5: Decorators' caulk now applied all around the deck and around the hatch, masts and fairleads.



6: This deck has been planked and the tape has been applied, to seal the gap between the 'inner' hatch cover and the coaming. 7: The 'outer' hatch cover (in this case a deckhouse, with 'skylight' access to switch underneath) is seen placed on top of the coaming and 'inner' hatch cover. It is a tight fit, the better to keep out the water.

'shelves' in the hull frames, and 'thwarts', across the model, which also locate the lower masts. You will have your own ways of doing all of this, but essentially, we have now come to the point where 'false decks' are to be fitted, into which hatch openings will be cut, and onto which a planked deck will be laid.

I use thin plywood to make the 'false decks', cut to be a reasonably close fit within the hull, either flush with the top of it or behind bulwarks. At positions determined by access to the components below, I cut hatch openings, so that I can 'go below'; if I ever have to. When all is ready I glue in the 'false decks', invariably in sections, and it is now that the obsession with water tightness starts.

Real sailing ships had hatch coamings to keep seas which swirled around the decks below the level of the lips of the hatches. In reality, the sea often came over the whole hatch, but the coaming was the start of the defences for the holds. So it is with my models, each opening in the 'false decks' has a coaming, about 15mm high around it (**Photo 3**). The

coamings do help to stiffen the decks, but their main function is to raise a barrier against water on the deck. After making the coamings, I glue in sills, one on the inside of each side so that I can fit an 'inner' hatch cover resting on the sills and flush with the tops of the coamings (**Photo 4**). When the 'inner' hatch covers are fitted, they are sealed with the coamings by taping round all sides of the hatch with duct tape or similar. An 'outer' hatch cover, in the form of a model of a real hatch cover, or a deck house, is the final touch, made to fit tightly over the taped 'inner' hatch cover hopefully to complete the seal (**Photo 6 & 7**).

In line with the raising of the lips of hatches via the use of coamings, I also have to consider the fairleads, which carry the running rigging which operates the yards through the decks. If these holes in the decks were to be flush with them, then water would run straight down them, as it swirled about the boat. Therefore, I fit the fairleads in blocks of wood, which lift the holes about 20mm above deck level (**Photo 5**).

Outside control

I often see fellow modellers remove superstructure to get at batteries, and on/off switches. For me that is an unattractive proposition, as space is at a premium inside my hulls, and therefore, battery removal for charging is an operation to be avoided. Therefore, I solder (badly I might add) some sturdy brass wire on to the appropriate leads of my switch harnesses (**Photo 2**), and bring them up through the deck from below so that I can charge my boats from outside by connecting the charger via crocodile clips. I arrange my switch harnesses so that I can fit the switch into one of the 'inner' hatch covers, so that I can turn the models on or off simply by opening a sliding cover in the appropriate 'outer' hatch cover or deckhouse, and reaching in, to the switch (**Photo 4, 5, 6 & 7**). Both these arrangements mean that I don't have to 'break the seal' on my hatches, and go below, unless there is some kind of a problem.

8



9



9: A model of the Grain Race barque, 'Penang', taking solid water on to the main deck. You can readily appreciate why it's important to seal the decks. 10: The four-masted barquentine 'Mozart' heeled right over, beating on the port tack.

Sealing it all off

Having made all the above, it is vital that I seal all the places where it is possible for water to get inside the hull, so the next step is to fill in any holes between bulwarks, coamings, fairleads, masts and charging points and the false decks (**Photo 5**). The first stage is the use of a filler, either normal filler, or decorators' caulk. I apply it everywhere there

8: This is what all the fuss is about. The lee rail is under water on this model of the four-masted full-rigger, 'Peter Rickmers', sailing on a windy day. This is great sailing, as long as she is dry below!

is a gap, or a hole. The purpose is not so much to make the seal itself, but to fill the gaps in such a way that they are easier to seal later, by the use of resin and then varnish.

So, after the caulk is in and dry, I plank the decks. After that's done, I go around the edges of the planks where they meet bulwarks, coamings, fairleads, masts etc., with resin, applied with a brush, aiming to block up any remaining holes. After that has dried, I varnish the decks, usually two coats, again to complete the sealing process (**Photos 6 & 7**). Sailing ship decks were never varnished, so the finish is not authentic, but I'd rather lose a bit of authenticity, and be sure of a good, watertight deck. The final touch is to cut 'freeing ports' into the hull, through the bulwarks at deck level, to allow any water that gets on to the deck, to drain away, just like the real thing.

10



11



12

tall ships



11: Hooghly River Pilot Brig 'Fame', with her royals removed, on a fine day of excellent wind. Great fun, this! 12: Last of the Wool Clippers, 'Mount Stewart', seen from the weather bow, beating on the starboard tack. 13: 'Mount Stewart' 'running free', with the wind from astern.

After all this work, I put the hull into the bath, and lay it over, one side then the other, so that water goes across the joints between bulwark and deck, and between coamings and deck, as it surely will in action. If there is any sign of water getting below, I investigate and rectify, then re-test to be sure the hull is fully sealed. Only if this test is passed do I continue with the build, which in my case means installing the upper masts, then going on to fit the yards, bend the sails and complete the build.

The proof of the pudding

If I can take one of my boats sailing on a blustery day, 'windjammer weather', see her roll her lee rail under (**Photo 8 & 9**), and romp along for an hour or more and then lift her out, tip her up, so that the stern is down, with the hull vertical, above it and see no water come out of the fairlead at the stern, where the sheet for the spanker comes through the deck, then I know I've done the job properly. What's more, and this is the real prize, I won't have to 'go below'. I can go home, ready to charge up the boat from outside for the next sail.

YouTube

If you go to this link, you'll see water and deck-interact from on board; make sure you have your oilskins on! <https://www.youtube.com/watch?v=8WJHN8NpT7k>

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13





Club 500 Racing

A look at a popular model boat club activity by **Richard Simpson (Part 1)**



1: A Club 500 race program throughout the year can make for a very entertaining addition to any model boat club calendar. Keeping track of the tally of laps for each boat certainly breeds a competitive edge. 2: If all the boats are identical in performance it is only going to be the skill of the driver that will separate them. Consistency is key as well as reliability of the boat and avoiding any hazards.

Over the years Club 500 racing seems to have waxed and waned as enthusiasm builds up for a few seasons then falls off again as the current participants move on or lose interest. Then along comes another enthusiastic drive and it seems to get going for a while, which is pretty much where we are at my own club, Kirklees Model Boat Club, at the moment as we are now working our way through a second complete season towards another championship winner this September. It does seem to generate regular conversation though, both inside and outside of the club so I thought it might be worthwhile sharing a bit of what we do to maybe encourage other clubs to take part and maybe even head towards inter-club meetings. Perhaps then Club 500 events will remain more of a permanent feature of the club calendars around the country (**Photo 1**).

So what is Club 500 racing?

There may be some amongst us of a certain age who followed motorcycle racing in our youth and remember with fondness what was known as 'Production Racing', or more commonly, 'Proddy Racing'. The idea was that everyone had an identical production motorcycle, so consequently no equipment advantage, with the thinking being that the winner would then have to be the one with the highest level of skill. It sounded good at the time, however, not surprisingly the reality ended up more like the rider with the greatest 'bottle'/highest level of aggression/least value of their own life tended to win. While the racing was certainly 'exciting' it was inevitably quite dangerous and crashes were frequent, until common sense prevailed and the series was stopped.

Club 500 racing has certain similarities, although it is translated to small and light model boats going round a buoyed course on a pond, not exactly staggeringly fast but quick enough to get the excitement levels up. All the boats should be identical and therefore of equal capabilities with the winner being the driver who can most successfully get around without mishap and follow the most efficient line through the buoys (**Photo 2**). All the boats are from exactly the same components, so apart from perfection in building and the best possible battery condition they should all be pretty much the same. The racing can be exciting and certainly fun, so it certainly provides entertainment and a pretty good reason to turn up at the pond side.

A little history

The whole idea started off when one of the country's leading model boat kit manufacturers, 'Model Slipway', created a vacuum formed model boat kit, complete with all the running gear required and a set of instructions to enable a modeller to put together a simple but fairly effective racing boat. It was designed to be comparatively cheap and as fast (if not faster) than a lot of alternative, readily available fast electric models as well as being fairly straightforward to assemble and maintain. The idea being that if everyone built their models from the kit supplied parts and used a specified battery they would all be the same and could therefore compete on equal terms in a race series. The kit instructions even included a set of rules for any club to adopt, so that inter-club meetings could be arranged with everyone racing on the same terms.

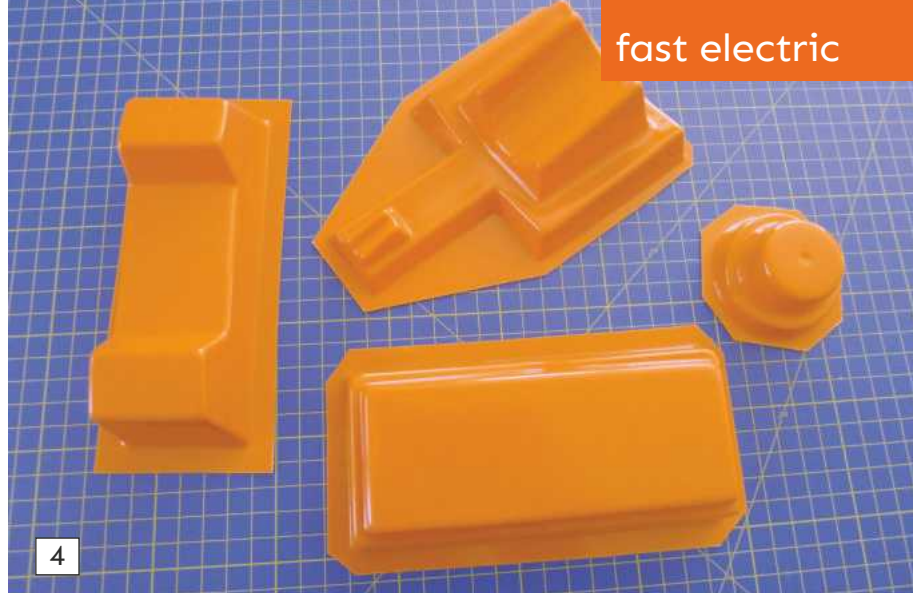
Eventually 'Model Slipway' decided to remove the Club 500 from their catalogue



3: The basic parts of a Club 500 kit. The deck is usually the same colour as the cabin and wing but the parts are always the same. The only difference in the build is really the care and attention that goes into it to ensure everything is perfectly aligned and smooth in operation.

and cease production, while the model boat world briefly mourned its passing. However, the model in its entirety was sold off to new owners and production was started again under the company name of 'Club 500 Slipway'. The original boat remained in production in exactly the same format as previously, however 'Club 500 Slipway' went on to expand the range with a few new colours, a clear-hulled boat to enable the interior to be seen, known as the 'Club 500 Ghost' and an opalescent white version with internal multi-coloured LED lighting known as the 'Club 500 Strike A Light'. All components from the vacuum formed pieces to the rudder assembly and all parts of the transmission can be purchased as spare parts and there are also now available a couple of accessories such as a propeller shaft alignment tool and a shaft oiler, so everything you need to build and maintain one of these boats is readily available at very reasonable cost. The model instructions show clearly how the boat should be assembled, and states the specification of the battery to be used and allows the fitting of the rear spoiler in either the forward or backwards attitude.

5: It is absolutely crucial that the rudder stock is drilled accurately and allows no slack in the post. The glued surface is very well roughed up with a very coarse glass paper for a good grip.

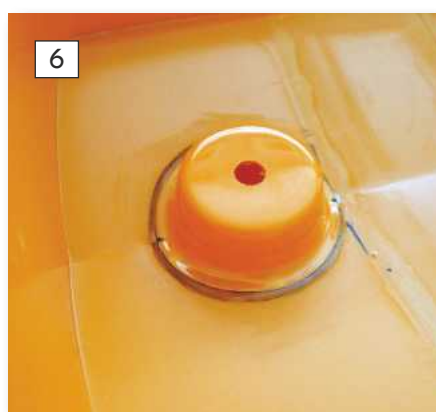


4: The internal pieces before trimming. The motor mount, battery tray, rudder stock and electronics tray all need trimming, dressing up, roughing up where they are glued and carefully aligning in the hull.

Building the model

If you purchase a complete kit of the Club 500 with your choice of deck colour, hull colour and window colour, it will arrive a few days later in a large and secure polythene bag, inside a sturdy cardboard box. Emptying the bits out for an initial check shows clearly the few parts involved but the requirement for a fair number of vacuum formed plastic cuts. While this may seem initially daunting it is soon obvious that the cuts are in such a position to enable the waste plastic to be removed easily and the final size to be achieved with a rubbing down with some abrasives. This particular example (Photo 3), is a mixture of a few spares to give you the idea however the colouring split of the parts is slightly different to those shown with the deck, cabin and wing all being purchased together in one colour and the hull, internal fittings and stand being purchased together in another colour. As you can see the

6: I used a piece of brass tube to ensure absolutely perfect vertical alignment of the rudder stock to prevent the rudder being out of true.



7: Don't be tempted to remove the shaft support from the motor mount as this ensures the correct relationship between the two. Getting the mount in exactly the right spot is determined by the propeller clearance and the tube protrusion.



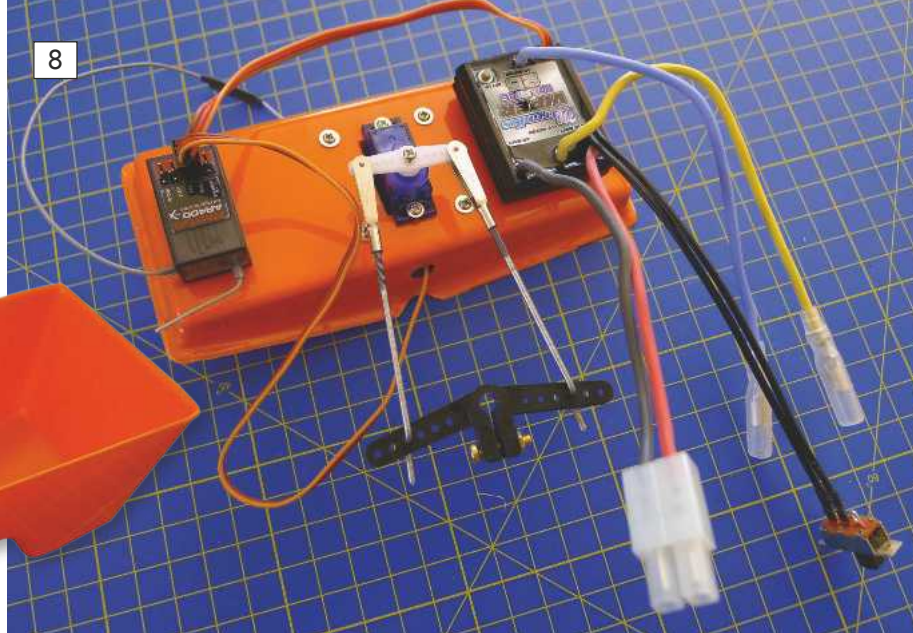
motor, rudder assembly, shaft and tube and all the internal supports are included.

Despite the fact that the boat has to be built from the supplied parts and the major components must be placed as per the plan there is still a degree of individuality possible as we shall see. The first jobs however are to prepare the lower hull and fit the main structural components (Photo 4) into it. Once you have trimmed the upper edge of the hull you can turn your attentions to the internal parts and get them ready to fit. First up is drill a hole for the rudder, trim the rudder post support and drill the hole in that (Photo 5) so it can be fitted in place (Photo 6). The instructions suggest a two part epoxy glue after roughening up the surfaces to be bonded, which does hold the parts together but they can be parted by force and, as the hull does have a degree of flexibility, this could be a concern. Unfortunately the plastic is very difficult to bond successfully so this may well be the best option and, as the rigidity of the hull is improved significantly when the deck is fitted, the epoxy may well be the best option.

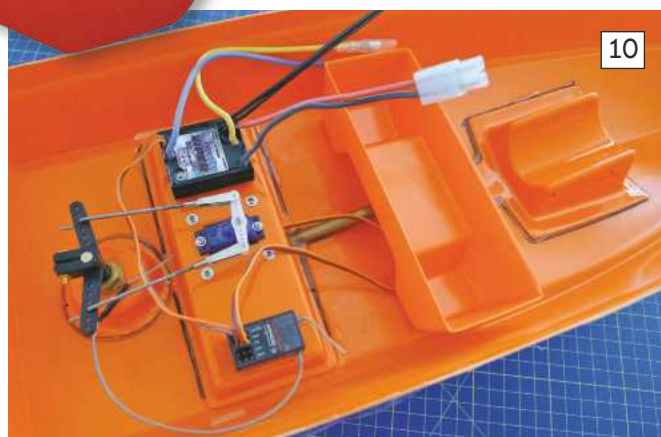
The position of the motor mount (Photo 7) is the most critical and I would suggest that the motor alignment tool accessory is used to get this as perfect as possible. The shaft must be at the correct angle to give you no more than 2mm clearance at the tip of the propeller to the hull as well as the 40-45mm extension of the shaft tube outside the hull with the motor and shaft in perfect alignment. This will give you the location for the motor mount, which can then be glued in place.

8: It is worth putting a bit of time and attention into putting the components on the electronics tray neatly and securely. This will allow for easy maintenance in the future and allow a change out of any single component.

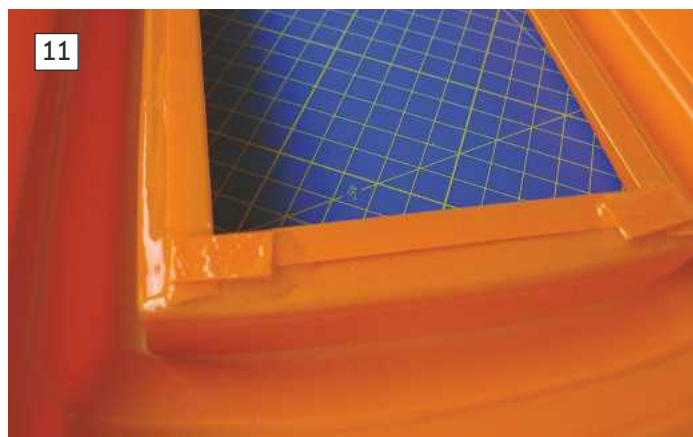
9: The battery tray does have a very slight longitudinal clearance so its position can be within a range. Some modellers like to use Velcro to maintain the flexibility of position but I prefer it to be securely fastened to the hull.



9



10



11

10: All the internal pieces in place and ready to receive the motor and have the wiring tidied up. 11: Having a nice large hatch for access is very useful but this then needs to be secured from below. Scrap pieces have been epoxied in place to provide a supporting edge for the hatch to rest on when closed up.

The radio tray probably allows you the most flexibility as you can link up to the rudder to the servo as you prefer and you can even decide whether you want to use a speed controller, a relay or even a servo to operate a simple on-off switch for motor control. The instructions actually show three different wiring arrangements so you can select one or even come up with your own as long as it remains within the rules. The relay switch option might seem like an attractive possibility initially however when it gets a bit crowded around buoys and you want to slow down without actually stopping you might decide that a speed controller is a better option. I have even seen an old 'Bob's Board' used in the past but these can get a bit too warm and lead to reliability issues

and I actually think a modern speed controller is quite a bit lighter than a Bob's Board and additional servo. I went with a solid state speed controller and a push/pull rudder arrangement from a mini servo, which was mounted on two wooden beams glued to the underside of the tray. This gave a fairly neat and tidy arrangement with good access for maintenance and future parts replacement (**Photo 8**).

The position of the battery tray (**Photo 9**) is determined from the layout drawing and taking into account if you have decided to fit a tube oiler, allowing suitable access to that. Some modellers like to use Velcro here for fixing the battery tray to allow a degree of trim adjustment for varying conditions however I am not sure the

benefits outweigh the possibility of the battery coming adrift during a race. Once all the internal components have been fitted (**Photo 10**) you can test the rudder operation, fit the motor and tidy up the wiring

Probably the biggest job of building a Club 500 is fitting the deck to the hull. The first part is preparing the deck by trimming and sanding the lower edge and then deciding on how you want to arrange the opening. I rubbed the lower edge on a full sheet of sand paper, taped to a flat surface to ensure that it is perfectly square all around the lower edge. I would strongly recommend you create a hatch in the deck to allow full access for battery changes and maintenance but to also enable the hull to be sealed during a race. I cut out a rectangular opening and then fitted a support around the opening in the inside so that the 'hatch' has an edge to rest on (**Photo 11**). When in use I then tape one edge of the hatch permanently and put insulation tape around the other three sides as I close up ready for the race. This can be time consuming between races but I prefer the insides to be completely watertight in case of an overturn and which is why I choose not to fit the receiver on/off switch on the external surface (**Photo 12**). For the deck joint the instructions recommend Evo-Stick 'Nail and Seal', which might initially seem an odd choice however the joint is a very long one and there is a good wide contact surface between the two to enable a good level of grip. There will also be a gap left



12

12: The hatch will be taped or hinged along the rear edge and the remaining three edges will be taped down just after turning the model on before a race. This ensures the maximum integrity of the internal volume and the least risk of water ingress.



13: There is a white plastic tube supplied in the kit specifically for the purposes of making locating pins. The two at the back of the boat simply slot into two holes drilled into the cabin. 14: The forward end of the cabin has a single hole drilled into it to locate onto the front pin. When in place the cabin is surprisingly secure and yet very quick and easy to remove.



15: After seeing this cabin at the bottom of the pond yet being lucky enough to be able to retrieve it with a long poled net it was immediately fitted with some foam buoyancy aids!



16: Decorate to your heart's content. I do like to add a little bit of scale by sticking a small plastic kit built engine on the rear, in place of the quite basic kit supplied engine. The stickers are all 1/10th scale radio controlled car items. 17: From the front you can see the obligatory piece of foam for those inevitable bumps and the rubbing strip glued to the lower edge of the deck overhang.

underneath the edge of the deck, which can be filled with more glue for an excellent watertight joint all around the deck and this does allow you to fit some form of protective strip around the lower edge of the deck. I would also suggest at this point some form of buoyancy aid is fitted, simply to ensure the model does not sink in the event of an overturn. I have seen ping pong balls glued inside the hull, pieces of bubble wrap glued inside and even air filled packing materials. My own boats have a couple of pieces of expanded polystyrene inserted into the bow but ultimately anything will do that does not affect the performance but which ensures that you do not lose your boat.

Once the deck is fitted the remaining parts, namely the cabin and the wing are a relatively straightforward job to trim and fit. The wing requires adhesive and can be fitted in either attitude, or even omitted, and the cabin can be fitted to the deck in any of a number of ways. I find the easiest to fit and the easiest to work with between races is exactly as suggested in the instructions. This is simply fitting a couple of plastic pins at the rear of the cabin, cut from supplied material in the

kit (Photo 13) and another plastic pin at the front (Photo 14), to allow the flexibility of the cabin to enable it to be snapped in place very quickly and easily. Should you be particularly unlucky and the cabin is knocked off your boat during a race you need to add some sort of floatation aid such as a piece of expanded polystyrene or, in my case, a couple of pieces

of sticky backed closed cell foam tape to prevent it from sinking (Photo 15).

The remaining tasks are simply decoration and setting up. For the decoration you can start with the supplied stick on windows and then let your imagination go wild. After a couple of painted examples in the past I have now realised that colours are best remaining with the plastic base colour as paint invariably gets chipped and scratched but 1/10th scale model car stickers work perfectly to individualise your boat (Photo 16). This is not just decoration, as all the boats enter the first corner around the buoy you need to be able to see your own model very clearly to help you steer through what may well be quite a hazardous path so you need fast and easy identification of your own boat and the direction it is going in! The rules also state that a piece of foam should be added to the bow to protect the other competitors from the occasional wayward course (Photo 17).

Setting up will be conducted mainly on the water however there will be one or two things to do on the workbench before you get there. The first job is to obviously test the radio is working OK so a range and function test would be the first thing to check when the battery is fitted and the boat turned on. Next up, if a solid state speed controller is fitted would be to set the limits on that and ensure the neutral position is with the stick centralised. My own speed controller does not have a reverse function so I only have the span to set from neutral to full ahead. I would then fill your stern tube with some light oil, if not already done, and take the boat down to a pond for a test run (Photo 18).

18: Trials are as much about setting up the boat as it is about getting a feel for how to handle it and make the most of available conditions. Avoid all other objects, either fixed or moving and try to make the most of the surface conditions. Set the rudder span to avoid stalling the model round tight corners.





Presidential PT Boat!

Revell 1/72 Patrol Torpedo Boat PT-109 by Toby Knight

TOP: Revell GmbH.



JFK's ELCO

PT-109 is probably the most famous small boat of the Second World War, made so by its illustrious captain, Lieutenant (junior grade) John F. Kennedy. The boat itself is an early 80ft ELCO with four 21in torpedo tubes, 20mm

Oerlikon cannon aft, two twin .50cal machine guns and an Army 37mm anti-tank gun field mounted forward.

The kit is moulded in Revell's new grey plastic, comprising two separate hull parts, the deck, along with nine sprues and three additional clear sprues. The detail on the

parts is good in places, whilst soft in others. The instructions come in a colour booklet, which unfortunately continues Revell's bizarre theme of only using their colours, which are not matched to any other paints. Personally I've never used Revell paints and don't intend starting now, so some research is needed in order to get accurate colours. The kit comes in two guises, both of PT-109; the earlier Aug 1942-Feb 1943 version in a blue-grey colour as well as the later Aug 1943 version in Dark Tropic Green.



Putty and sanding

The build starts with gluing the two hull pieces together, along with an internal bulkhead that should get everything lined up. Unfortunately, there are gaps in the lower hull around the joins which required an amount of putty and sanding. Part G5 is added next, which fits awfully, and led to huge amounts of putty and sanding. In Victor Chun's book, the plans don't show such a proud part. It is simply a piece of metal for holding a cable, none of which is included in the kit, making me query Revell have added it in the way that they have. The transom part aft is the same. There doesn't seem to be any reason why it needs to be molded separately, but they have done. This just creates further puttying and sanding. A Tamiya kit this is not!!

With the main hull parts in place I went ahead and painted part of the interior cabin and what appears to be the pilot house under the bridge. Again Revell's paint colour chart requires some translating but to be fair, it's an off white and black. With a small amount of weathering to add some grime it was done.

At this stage you are now adding the deck. Before doing so, read the instructions carefully and only drill the holes that you need to. This will determine early on which boat you are modelling, as only the August 1943 version has the 37mm anti-tank gun fitted forward.

With the deck fitted it seems as if everything is now going ok. The instructions now ask you to add the shafts, propellers and rudders. Because I know this will cause problems in knocking pieces off I decided to leave them until later on. Whilst the kit is upside down, its stand is built, although I kept this separate as I sat mine on some foam strip.

Searching for parts

Part 12 deals with the engine exhausts, and is not particularly clear with the placement of part C188. At this juncture, can I add that Revell's designers have a further bizarre little knack of mixing all the part numbers up, so part C188 will not necessarily be next to C187, it could be next to C3 or C47. This makes searching for parts very time consuming and eventually soul destroying!!

Moving on to the structure aft of the bridge where the previously built cabin was glued into the underside of the deck. The sides are added with openings for the glazing pieces. Unfortunately there are numerous ejection pin marks all around the inside of these pieces. I was hoping that the cabin would be dark enough that these wouldn't be seen. Part 14 deals with the opposing side windows, also with the same ejection mark issue, but this had a further issue. The two parts of the twin .50 cal turret was not a quality fit. For what is apparently a newly tooled kit, the fit was poor, as well as having further ejection marks. I ended up having to use putty again and then sand it smooth. Having built some lovely Revell kits, I really expected better from a 'new' kit. Additional pieces made up the rear and an internal ladder.



Revell then seem to lose the plot somewhat, and I can't understand why they have done this. Rather than molding the entire roof as one piece, they have broken it down into two pieces. This is fine, but the two pieces don't fit well together and are at slightly different heights. Further issues arise from having to putty and sand without removing detail from the other parts, which is difficult. Reverting back to Chun's plans as well as photos of early ELCO boats, there is no line there, and no need to make one. I have Italeri's 1/35 PT boat, which is a later model and the roof is a single piece with no line in it. There is no sense in this at all that I can fathom.

The engine room cowl vents are added, some of which had some flash to remove, along with part H53, the 20mm Oerlikon guard frame. I would seriously advise anyone to add this near the end as I broke it early on and kept knocking it. Use a razor saw to remove the part from the sprue and do it very carefully as well as cleaning up the attachment points.

Stage 23 deals with some minor fittings as well as the Oerlikon platform. Again, this is a separate piece that does not fit particularly well. If they are planning on doing a later ELCO then there seems no need to have this as a separate piece as the mounting for the 40mm Bofors that would be fitted on the stern would easily cover the entire area. Instead the modeller is left with panel lines that shouldn't be there and are difficult to fill and sand due to the proximity of other detail.



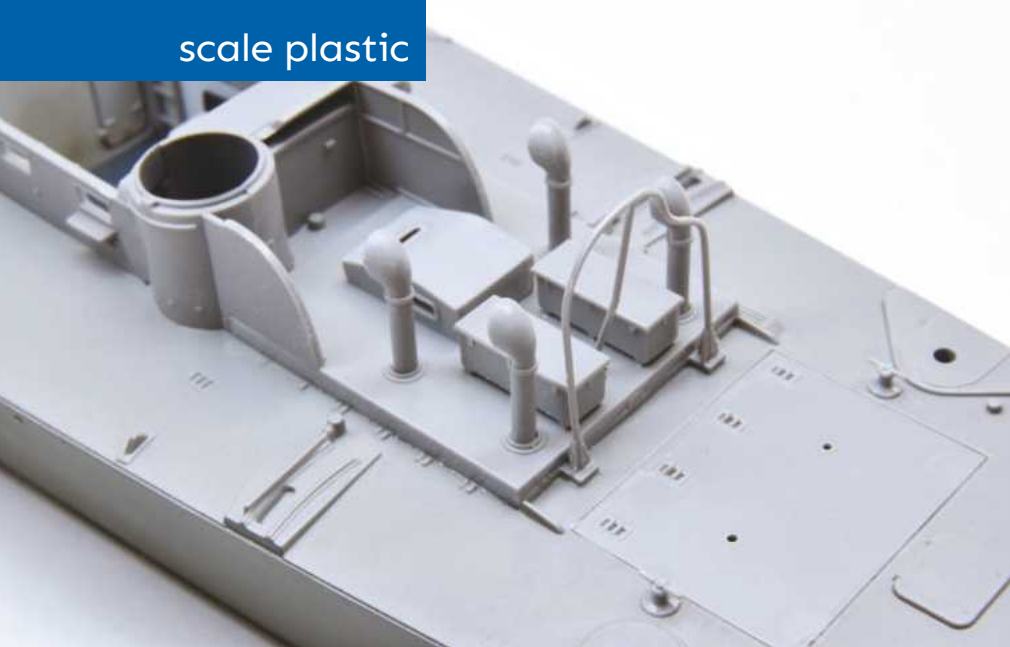
Bridge and wheelhouse

The following nine stages deal with the wheelhouse just forward of the bridge as well as the construction of the bridge itself. Parts F39 and E42 had significant ejection pin marks that required fixing before they were fitted. Further ejection marks were found on part E48 which required resolving, as well as the atrocious join between parts F39 and F40 which again required putty and significant sanding. Revell then have continued to make additional parts when a single piece would suffice. Part F41 is separate, when I see no reason why it couldn't have been molded as part of the wheelhouse roof, part. F45. Again it created panel lines where none should be and it wasn't a particularly good fit. In a newly tooled kit this really shouldn't be happening, and is unfortunate as it detracts from the good aspects of the kit.

The instructions suggest that before closing up the wheelhouse cabin, the interior is painted. This is ideal as it is tight inside, even without the roof, so I would suggest to paint the items on the sprue and then attach them, or be mindful when you are going to attach the superstructure sides.

With the main building work completed, the instructions move on to the weapons. This starts with the 21in torpedoes, which are





nicely done, but the join is not good and the lines are hard to remove once again due to the proximity of other detail. These were built in any case and left to one side. The .50cal shields are next to be fitted, but once again part F71 and 72 were dogged with those ejection marks in a visible location. The twin .50cals are nice but basic, with soft detail. Personally, I would have replaced them with a turned barrel and added some etch ammo. Again be careful with the mount as the arms are very fragile. Again I managed to snap one whilst removing it with a razor saw, but it was easy to reattach. The 37mm anti-tank gun is a simple model but be mindful that you need to isn't the mounting bracket a different colour to the rest of the gun. All the weapons were built and left for individual painting.

The two depth charges were awful with huge clunky attachment points, poorly fitting molds and in the modern age of slide molding, why weren't they molded as a single piece. This resulted in me having to sand, putty and sand again just to get a half decent result.

The 20mm Oerlikon was a nice part of the kit and went together easily, although it did have some flash on parts! This was kept to one side to be added to part G166 later. The smoke generator was glued aft and the rear cabin roof was added. I have already discussed the breakdown of this part, so I won't labour the point further. Reviewing Chun's plans again it is clear that Revell have molded the torpedo training gear cranks in the wrong position. Whilst a minor point, these plans are easily available in a variety of books and this should into have been missed. It just seems to exemplify the lack of attention to detail.

Ensure that before you fit the rear cabin roof you either add the small structure for the earlier PT-109 or fill and sand the attachment points for the August 1943 version which had the 37mm anti-tank gun fitted forward.

Accurate paint

Prior to adding any paint I conducted some research to try and identify the most accurate paint colour for the later version. In early 1943 BuShips began the development of a green series parallel to the blue-grey series of colour using a Dark Tropic Green. Unfortunately this was very slow to be adopted and with the effects of a blazing sun as well as the salt water spray, these colours would have changed significantly over time, unless they were regularly painted.

In view of that I used two greens over each other, with a basecoat of Tamiya Japanese Army Green (XF-13) with a cloudy overspray of Mr Paint Dunkelgrun (MRP-61) to give a patchy appearance. This colour was used over the entire boat, including all the weapons. The anti-fouling stripe was masked and sprayed using a combination of Tamiya Hull Red (XF-9) and Red (XF-7) mixed until I was happy with the colour. I never have a set colour for this and it is mixed by eye so that each ship has a different coloured anti fouling

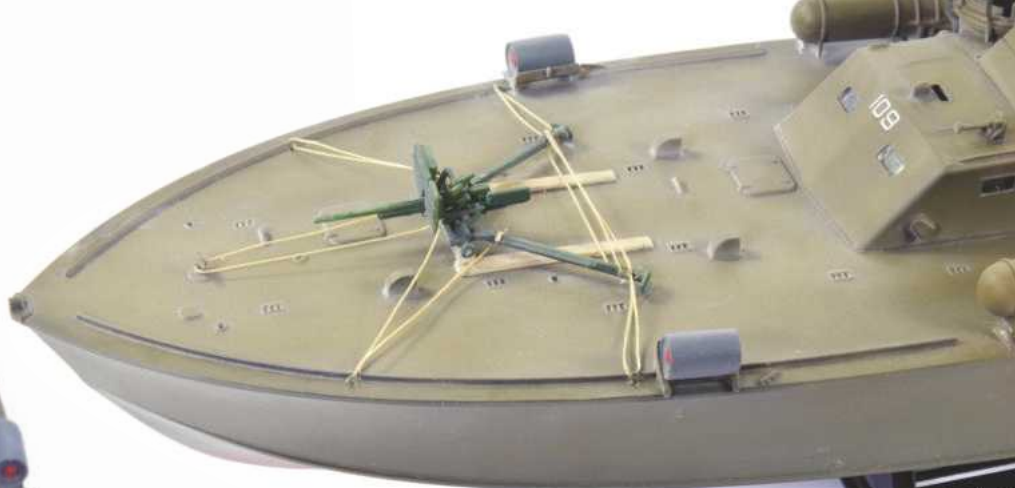
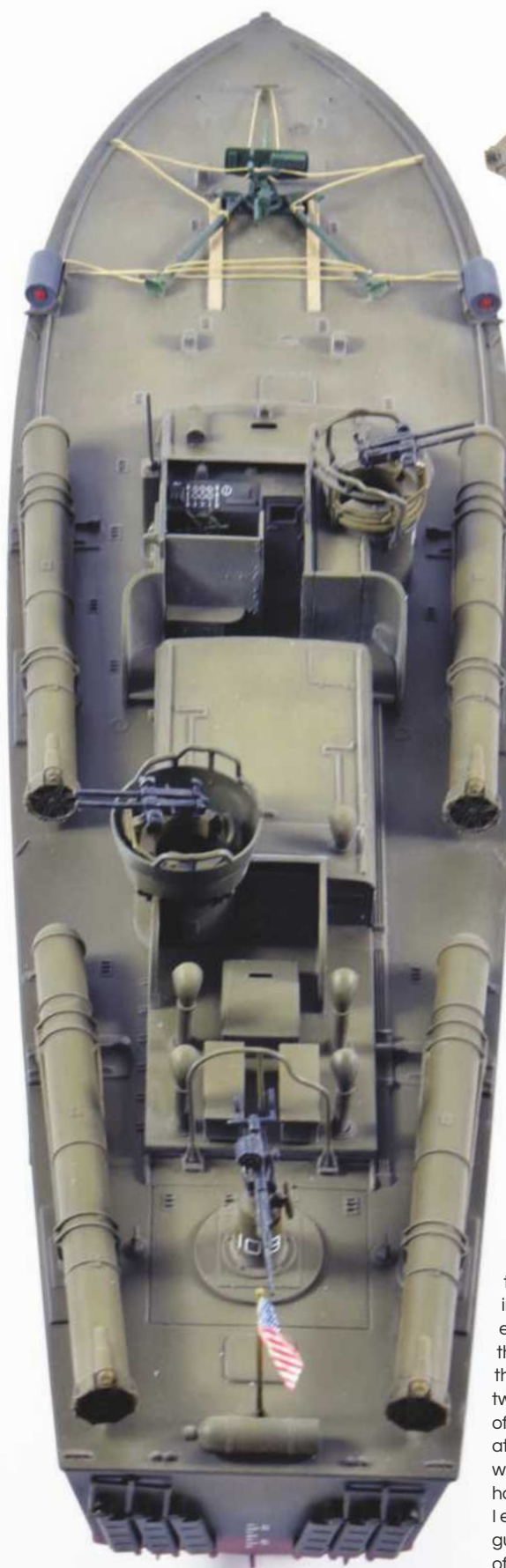


coat. This is essentially the boat painted, however, in order to add more weathering effects I took the basic XF-13 and added some Yellow Green (XF-4) to lighten it up, thinned it down to 80/20 thinner to paint and sprayed this in the centre of panels and down the hull to give the impression of bleaching through sunlight and salt water.

The entire kit was then glossed using Mr Hobby Super Clear decanted out of the spray can. There are very few decals and these were swiftly added and then glossed over again.

The US flag was set on a small piece of aluminium foil, which was then folded over and glued the next day when dry. This could then be formed better and attached to the flagpole later. All the guns and torpedoes were then glued onto the boat ready for the next step.

Weathering was a difficult choice due to a lack



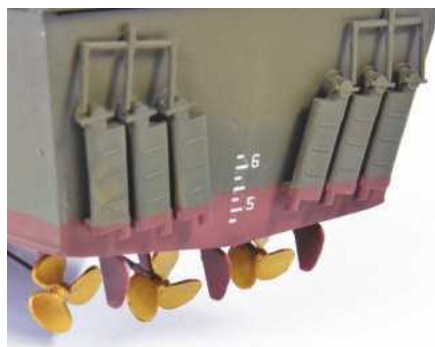
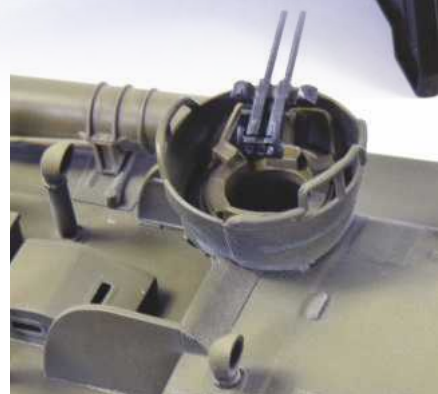
of references around PT-109. I decided that there would be a. Small amount of dirt but not any rust as there was very little metal on these ships that would rust, and that would easily be touched up. An initial wash of AMMO Neutral Panel Line Wash (PLW) was added over all detail, followed by a thinned down additional wash of AMMO Shadow for Brown PLW. Further pin washes of AK Interactive Winter Streaking Grime around some details and I was happy with the result.

The barrels of all the guns were painted in XF-1 and then drybrushed with X-10 to give the impression of being well worn. They were also given a light wash of AMMO Shadow for Desert Brown PLW as the sand and dust would have got everywhere despite rigorous cleaning. The depth charges had been painted separately XF-63 and the small red circles added at each end. These were fitted late on and given a light wash of AMMO Shadow for Desert Brown.

Some streaking effects using AK Interactive's Salt Streaks for Ships was used on the hull to give further visual evidence of wear from the sea on the paint work. At this point the boat was finished and ready for its matt coat. This is where things went a bit horrible. I failed to shake my can of Purity Seal enough and a horrible frosting occurred. This was quickly rectified with a fresh coat of gloss, and a coat of Mr Hobby Super Clear Matt was used after a good shake and heating up to above room temperature.

The final thing to do was to attach the rope to the 37mm anti-tank gun. Unfortunately in order to fit the rope you have to drill a hole either side of the strips that run either side of the foredeck. This is not stated anywhere in the instructions until you come to see how the twine loops under them! This just finished me off as I drilled four holes in the deck and then attempted to follow Revell's instructions. Their way of tying the rope off made no sense despite having several people try and un-fathom it. I ended up looping it through the gun brackets and using a drop of superglue to hold it; a very disappointing end to a kit that I had really looked forward to building.

With the boat completed, the stand painted using Tamiya X-1 with the decals added and a further spray of gloss varnish to seal it



all in. The boat was then carefully glued to the stand using small amounts of Revell Contacta glue and left to dry.

This was supposed to be a new tool and when you look at some of Revell's new kits they are great. This one, however, left me underwhelmed. Strange breakdown of some parts, along with soft detail and flash have really let this down. Their stubbornness to stick with their own paints elongates the build process as does their way of randomly numbering parts on the sprues. I would be interested to see just how different this is to the old tooling and in what way they have modernised it. I'd love to say that this was a great kit, but I can't. It's cheap and great for less experienced builders, but it doesn't compare at all with other slightly larger PT boat kits that are better designed with far stronger detail.

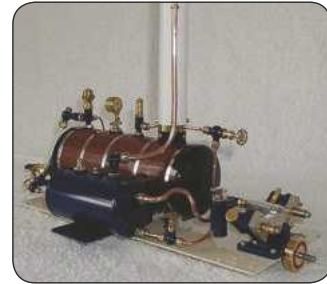


The Best of **BRITISH STEAM**

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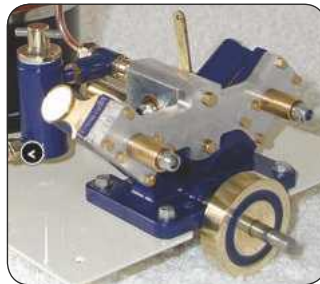
My Ribblesdale and Wharfedale plants are individually made to the highest standard demanded by my customers around the world. They are recognised as wonderful collector's pieces that over time will increase in value as have many of my other models I have made over the last 48 years.

I can proudly state that my models are "Made in Yorkshire" the birthplace of many of the best Engineers in the world



The illustration shows the "Ribblesdale" boiler mounted on a common bedplate with the "Richmond" twin cylinder steam engine and a steam oil separator. The "Ribblesdale" boiler is constructed from copper components and silver soldered. The boiler is stoved with high temperature paint at 175 degrees C. The boiler is lagged with individual hardwood planks and held by stainless steel bands. To improve the boiler performance it is fitted with a ceramic burner. The finished boiler is pressure tested to 150 psi for continuous working pressure of up to 80 psi. A test certificate is supplied with the boiler confirming the test and guarantee of quality. The boiler is fitted with a water filler bush, pressure gauge, water gauge glass and blowdown valve, safety valve, vacuum valve, steam on/off valve, ceramic gas burner, gas pipe and gas on/off valve. The white/cream stove painted chimney is pre-drilled for the exhaust pipe bracket should you wish to extend the exhaust pipe alongside the chimney.

This plant is priced at £1550



The illustration shows the "Wharfedale" boiler mounted on a common bedplate with the "Richmond" twin cylinder steam engine and a steam oil separator. The boiler can be fitted with either the "Richmond" engine or "York" engine and a steam oil separator. These can be purchased as single items. The "Wharfedale" boiler is constructed from copper components and silver soldered. The boiler is stoved with high temperature paint at 175 degrees C. The boiler is lagged with individual hardwood planks and held by stainless steel bands. To improve the boiler performance it is fitted with a ceramic burner. The finished boiler is pressure tested to 150 psi for continuous working pressure of up to 80 psi. A test certificate is supplied with the boiler confirming the test and guarantee of quality. The boiler is fitted with a water filler bush, pressure gauge, water gauge glass and blowdown valve, safety valve, vacuum valve, steam on/off valve, ceramic gas burner, gas pipe and gas on/off valve. The white/cream stove painted chimney is pre-drilled for the exhaust pipe bracket should you wish to extend the exhaust pipe alongside the chimney and also includes a polished brass flared top. This plant is suitable for installation in all my boat products with ample power to drive your boat satisfactory.

The price for this model delivered by UPS within the UK is £1550. Please contact us to discuss delivery, based upon your requirements. You can now place a reservation on payment of £100. The balance of the purchase to be paid upon notification that the model is now ready for despatch.



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HMCS St Johns leaving the
liner Terminal at Liverpool.



Range Finder

This month **Dave Wooley** continues with Part 2 of the Canadian frigate HMCS St Johns on a recent visit to Liverpool back in May of 2018

Welcome once again to our regular sortie into the world of fighting ships. Last month our tour finished just forward of the funnel uptake, we can now move to the amidships location and a view of the launch tubes for the Harpoon Block 1c anti-ship missile. Both the port and starboard quadruple arrangement are located at the main deck between the funnel and hanger shown here ringed in red. It's worth noting that these tubes face inboard and exhaust gasses from a launch are expelled outboard (**Photo 1**).

VLS & ASW torpedo tubes

Remaining amidships and concealed inboard, are the Mk.48 eight cell SAM missile tubes for the new evolved Sea Sparrow. Within the same shot to starboard and ringed in yellow are the twin forward firing 324mm Mk.32 mod 9 torpedo tubes (**Photo 2**). An image showing the 8 cell launch tubes and how they are installed inboard of the screen. In the foreground the launch tube cradle for the Harpoon missiles (**Photo 3**). The two portside torpedo launch tubes can be seen up close in **Photo 4**.

3: Inboard of the side screen are the VLS tubes for the missiles. Jonathan Evens.



1: According to official circles the Halifax-class has been designed with a degree of low Radar cross Section or RCS for short, shown here with parts of the deck housings sloped and angled.



2: Unusually both the torpedo tubes and the VLS (missile tubes) are positioned differently from most other warships.





4



5

warship scale

4: Two fixed torpedo tubes either side of the after-deck housing. Jonathan Evens. 5: The area atop of the hanger, which included fire control radar, Sat nav domes, navigation radar and close in weapons system. 6: The Phalanx Mk15 MOD 1. 7: The front of the hanger, it's worth noting in comparison to other frigates the substantial diameter of the stanchions for the crash barriers.



7



6

Phalanx Close in Weapons System

The space atop of the hanger roof is well utilised with the addition of satellite communications domes and ringed in yellow mounted level with the top of the funnel is the after CEROS 200 fire control radar which replaces the SPG 503 tracker /illuminating radar. Also mounted over to the port side of the hanger roof is the ubiquitous but latest Mk.15 Block 1B Phalanx close in weapons system. Some years ago, I recall watching a demonstration at sea of the Phalanx and it is surprising to see that the actual spread of rounds discharged in a few seconds is officially quoted at 50 RPS or 3000 rpm but the range is probably no more than 200m.

Although the system has evolved with the threats it remains in shape and function much the same as it was when first installed aboard the carrier USS Coral Sea back in 1980 (Photo 5 & 6).

Hanger space

Moving further aft is a view of the front of the hanger and clearly visible on the starboard side is the positioning of the FLYCO (Photo 7). Sadly, I didn't get the opportunity to go into the hanger, but I understand that it has been modified to accommodate the new Sikorsky CH-148 Cyclone naval helicopter. Interestingly with reference to operating helicopters the Halifax class do not have fin stabilizers and have the bear trap helicopter haul down and deck transit system which is just visible in Photo 8 beneath this official Canadian navy shot of the CH-148.

Right aft

These final images of the St Johns show that the flight deck does not extend right aft as there is a step down which accommodates amongst the fittings located in this area the



8

8: The new Sikorsky CH-148 Cyclone helicopter. Canadian Navy.

9



9: A view of the flight deck which doesn't continue right aft as in many other frigates.

10



after mooring capstan and on the transom a 12.7mm MG to port and a mini gun to starboard (**Photo 9 & 10**).

The Model

This semi-scratch 1/72 scale model of the Halifax-class frigate HMCS Toronto (FFH 333) is seen here at the National Warship Weekend at Richmond Park Glasgow and was built by Michael Loney of the Scottish Model Warship Association. The GRP hull and a number of fittings were supplied by Jonathon Evens of Canada. The model depicts HMCS Toronto prior to the FELEX (Frigate Equipment Life Extension program) (**Photos 11-13**).

11



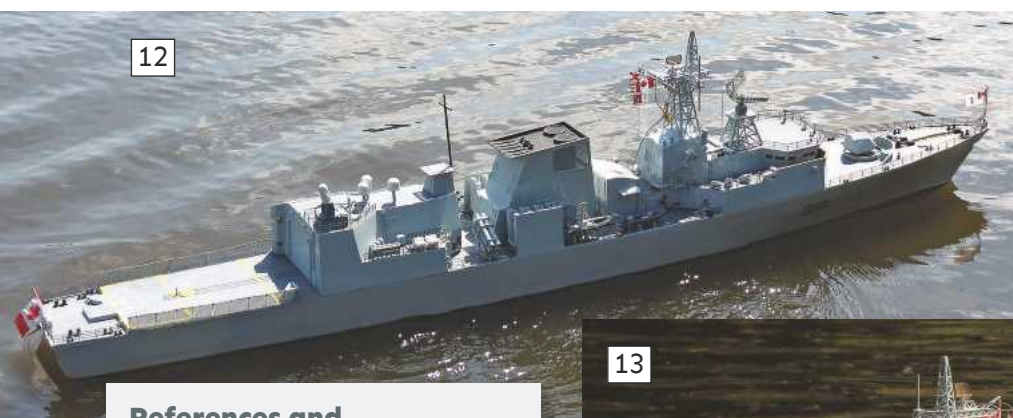
10: A more detailed image of the step down right aft. The shielded gun over to starboard is a 12.7mm machine gun.

11: This 1/72 scale model of the Halifax-class frigate HMCS Toronto built by Michel Loney and shown here at the National Warship Weekend at Richmond Park, Glasgow.

12: The 1/72 scale HMCS Toronto out on the water.

13: A final look to port at this 1/72 HMCS Toronto.

12



References and Acknowledgements

My thanks to Jonathon Evens of Canada.

HMCS St Johns ref - The Naval Institutes Guide to Combat Fleets of the World 15th Edition, Pg 79-81.

13





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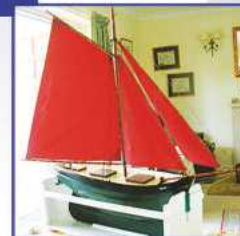
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Test Bench

A round-up of all the latest kits, books and blingy bits

Test Bench is a service that we provide free of charge to manufacturers, distributors and retailers of model boat-related product. Covering all disciplines, anything from books to balsa is accepted for these pages. To submit material, e-mail the editor via editor@modelboats.co.uk with the relevant information or send samples direct to the editorial address in the front of the magazine.



Italian Naval Camouflage of World War II by Marco Ghiglini

When Italy entered the war in June 1942, the Regia Marina (Royal Navy) was a force still in development. Italian warships and merchant ships faced the war in their peacetime colours; nor were there any pre-war plans for camouflaging ships. In the 1920s and 30s all the principal warships were painted light matt grey, but with the advent of war and the start of convoy traffic to Libya, the need to camouflage for purposes of deception became apparent and the first initiatives were undertaken.

The book begins by describing the varied schemes that were adopted for capital ships, cruisers, destroyers, submarines and torpedo boats, landing craft and merchant ships. The major part of the book depicts all the ships and their camouflage schemes, at different periods of the war. With more than 700 profile

drawings, in full colour, showing, where possible, both sides of the ship, together with over 200 photographs and drawings, in mono and colour, the reader is presented with a complete and detailed picture of the whole development of Italian naval camouflage. The author, Marco Ghiglini, also covers the Greek theatre where there were exceptions influenced by the German presence, by the camouflage schemes of captured vessels and also Italian warships captured by the Germans and put into service with the Kriegsmarine.

I'm convinced this deeply researched and beautifully presented, book will become the definitive reference source on the subject, for historians, collectors, model makers and war-gamers.

Thanks must go to Charlie Simpson at Seaforth Publishing for the review copy of the book which is available at www.seaforthpublishing.com

John Deamer

ISBN: 978-1-5267-3539-3

Pages: 240

Price: £35.00 (RRP)

Format: Hardback - 208 x 265mm

Publisher: Seaforth Publishing Ltd.

Website: www.seaforthpublishing.com



Hobbyzone Workshop Benchtop Organiser

Not to be confused with the producers and suppliers of remote control models, Hobbyzone PL specialise in storage solutions for the modeller and as well as the subject of this review, also produce tools, tables, racks, hangars and transport cases to name a few items.

The Benchtop organiser we have for review here is one of two produced by Hobbyzone; the other is a smaller, wall or bench-mounted version which we will review in a future issue. This one is large enough to accommodate the bulk of modelling paraphernalia which we all accumulate/need and it would not be a bad policy to discipline yourself to saying 'if it does not fit in this organiser, I either don't need it or already have too many!' On opening the box you are presented with a large number of wooden parts which on first glance looks like a large jigsaw puzzle and for those who shudder at the thought of building flat-pack – don't panic! Just like building a kit, take your time, lay out all of the pieces on the floor and follow the twelve-stage instruction leaflet. The joints are almost good enough for a sturdy dry fit but you will need to glue each part, which in my case, a previously reviewed bottle of Gorilla Wood Glue served me well. Incidentally Hobbies have their own great

range of glues so if you've run out, treat yourself to some more with your organiser. The organiser went together incredible well and after a quick hour was complete and pending the glue going off, was ready for my own modelling bits and bobs.

Once complete, the organiser offers space for a huge variety of modelling tools, glues, paints, brushes or whatever else you can cram into it. There are three accessory draws, a single large draw with six partitions, a single half-open drawer, a parted upper cover for tools, a large recess for paints and rattle cans, a roller for scissors and/or wire cutters and space for a large roller which could be used for sand paper, wire or threads. The space occupied by the latter can be converted into an area for extra drawers which are also available from Hobbies (HZ-WM1S).

All in all this is a great product, I even enjoyed building it, let alone filling it will all my bits and pieces; I think I might buy some new tools to put in it – or would that defeat the object! This review sample was supplied by HOBBIES (www.alwayshobbies.com) who stock the entire Hobbyzone range of organisers and workshop systems.

MC

Product: Wooden Organiser

Ref: HZ-WM1

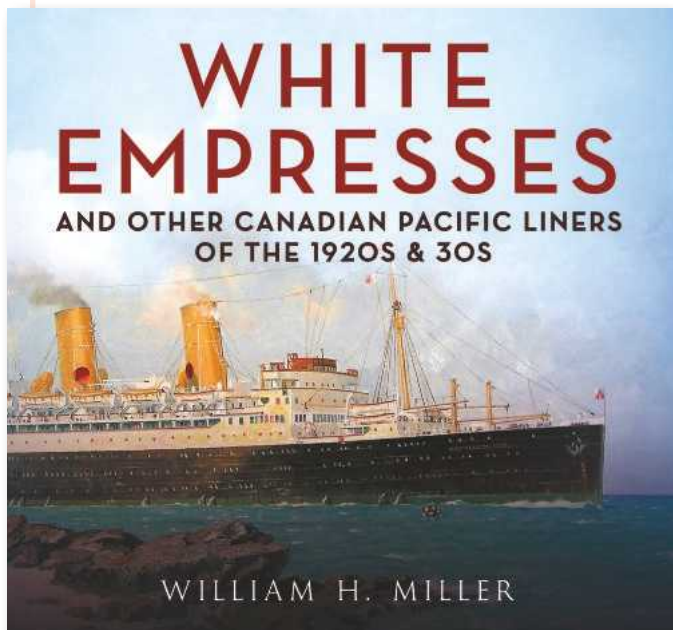
Size: 600mm x 220mm x 170mm

Parts: 51

Price: £39.99 (HOBBIES)

Manufacturer: Hobbyzone

Website: www.hobbyzone.pl



White Empresses and Other Canadian Pacific Liners of the 1920s & 30s by William H. Miller

The Canadian Pacific Steamship Company provided a worldwide travel network that included great passenger ships. First, the company had a superb transpacific service between Vancouver and the Orient with four splendid ships providing a twice monthly service. It all hinted of far-off, exotic travel – grand salons, and midnight sailings from Shanghai.

Where-as, on the Atlantic, Canadian Pacific ships provided a fine service, largely between Liverpool and the St. Lawrence River to Quebec City and Montreal. This culminated with the debut, in 1931, one of the finest liners of the twentieth century, the giant Empress of Britain. She was an exquisite ship, both inside and out, and she made luxurious world cruises in winter.

In this new book maritime legend, William H. Miller, 'Mr Ocean Liner' himself uses rare archive photographs, advertising posters, time tables etc. in both mono and colour, many from his own collection to illustrate the stories of these ships on both oceans in the 'golden age' of cruise liner travel, in the 1920s and 1930s, which all came to an end with the advent of the Second World War. Some ships were scrapped prematurely, or became casualties of war, while after the war, in the late 1940s and early 1950s, others were restored and refurbished for Canadian Pacific liner service. This fascinating book would certainly appeal to anyone with interest in ships from this pre-war era of passenger travel. Thanks to Jay Slater at Fonthill Media Ltd. for the review copy of the book which is available at sales@fonthillmedia.com
John Deamer

ISBN: 978-1-78155-680-1

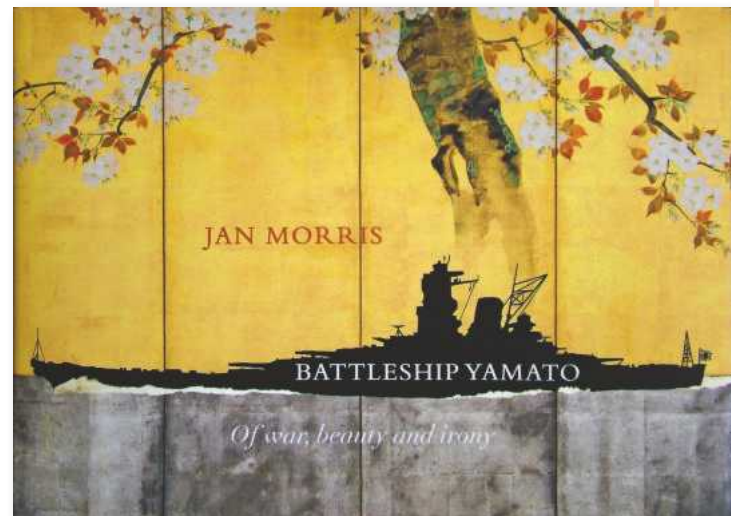
Pages: 112

Price: £19.99 (RRP)

Format: Softback - 227 x 247mm

Publisher: Fonthill Media Limited

Website: www.fonthillmedia.com



Battleship Yamato – Of war, beauty and irony

By coincidence and not long after the second part of Dave Wooley's Ranger Finder column featuring a 1/10 model of IJN Battleship Yamato appeared in this magazine, I happened to be in a branch of Waterstones bookshop and noticed the cover of the book reviewed here. As can be seen, the cover of this book features a black silhouette of the famous warship cleverly superimposed on a traditional Japanese painted folding screen depicting a cheery tree in blossom. This poignant juxtaposition of menacing war machine with a symbol of nature's beauty and fragility sets the tone of the narrative within. The Author Jan Morris takes the reader on an emotive journey following Battleship Yamato and her crew on their final sacrificial mission to Okinawa.

In addition to images of famous works of art (both western and Japanese) reproduced to illustrate

thoughts and ideas expressed in the text, there are also several contemporary photographs of Yamato. Some of these photographs will, I am sure, be familiar to those interested in Yamato, but some are new to me. I particularly like the images of an early concept model of Yamato and the formal group photos of officers and crew are a welcome reminder that warships have a human element.

This book is no 'Anatomy of the Ship', but rather an exploration of what the massive warship Yamato meant to the nation who built her, the people who served on her, to those who pursued and ultimately destroyed her. In my opinion this atmospheric and thought provoking book would make an excellent companion to compliment other more technical volumes on the same subject. Recommended to fans of IJN Battleship Yamato.

My copy of this book was purchased from Waterstones (www.waterstones.com).

Richard Dyer

ISBN: 978-1-84368-147-2

Pages: 112

Price: £14.99 (RRP)

Format: Softback - 135 x 195mm

Publisher: Pallas Athene (Publishing) Ltd

Website: www.pallasathene.co.uk



Sparmax Arism Mini Air Compressor

The team at The Airbrush Company recently passed to the Editor a Sparmax Arism Mini Oil-Less Air Compressor. One of the big players in the Airbrush world, Sparmax manufactures Compressors and Brushes under their own brand while producing items for other well-known brands such as Iwata.

The Mini comes well-boxed with the packaging offering ample protection for the item within. The advertising blurb says this is a 'sleek and modern' design, and to be fair it does look good for what it is. It is immediately obvious that this Compressor is a quality piece of kit, the outer cover being made in a well-finished lightweight alloy. This particular Compressor came in 'Cosmic Grey', one of eight colours available in the range. With a bolted-on carry handle, the machine comes in at L17.5 x W9 x H17.2cm and 2.5kg. One end has the on/off switch and a fixed electric power supply lead, the other having an air pressure adjustment knob and the air-outlet socket for the supplied 2m of 3/8" fitting air hose.

Airflow is quoted at 12-14l/min, the pre-set Max Air Pressure is 45PSI, that is obviously adjustable. Not having an air tank, the Compressor itself is in continuous operation

once switched on; it is recommended that use is limited to 30 minutes per session, with a 15 minute cool down time. There is also a thermal safety switch to ensure there are no issues. While it may sound limiting, 30 minutes Airbrushing will cover a lot of model and is not an issue. That constant running compressor means the noise level needs to be acceptable and the Mini has no issues there. It is Airbrush Folklore that compressors without tanks can have problems with pulsing in the delivery of product, however, I have not found this to be a problem as yet, spraying well across the range of pressure delivery.

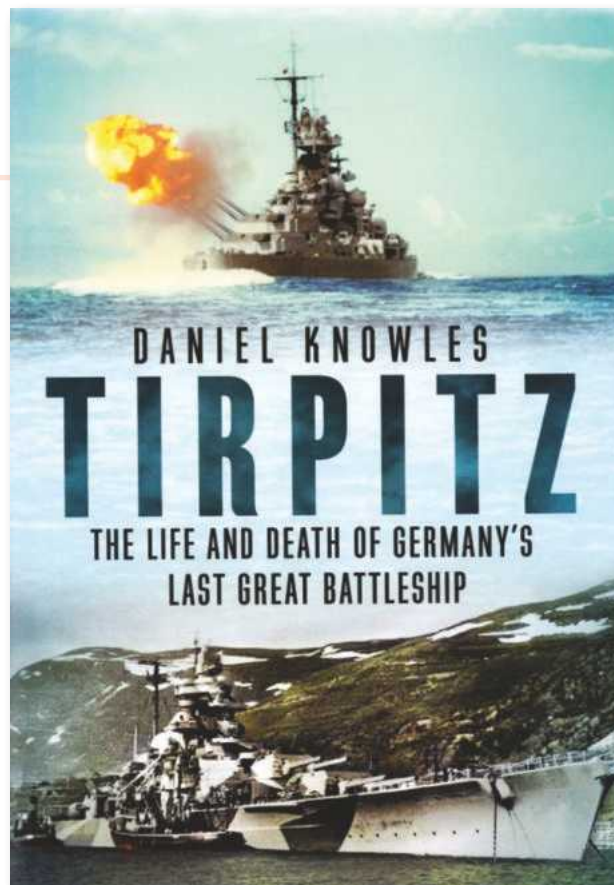
The Mini Compressor retails at @£115.00 and frankly does what it says on the tin, attach an Airbrush, spark it up and spray, no issues. I really see this as an ideal Compressor to accompany you on your first foray into the world of Airbrushing, however I have no concerns that it will suit users across the spectrum.

Well-priced, reliable, quiet enough to not upset your significant other and nicely sized. What more do you want?

Thanks very much to Lisa at The Airbrush Company Ltd who are the main UK stockist for the Sparmax range; please visit www.airbrushes.com.

Paul Carter

Product: Compressor
Ref: C-AR-MINI-GREY
Parts: 3
Price: £115 inc. VAT (The Airbrush Company)
Manufacturer: Sparmax
Website: www.sparmaxair.com



Tirpitz – The Life and Death of Germany's Last Battleship by Daniel Knowles

The Battleship Tirpitz and her sister ship Bismarck were the two battleships of the Bismarck class, the largest capital ships ever built and completed in Germany. Both ships enjoyed only a brief existence; and though, begun during peacetime, both were commissioned after the outbreak of the Second World War. Bismarck's fate embraced triumph and tragedy; and over a limited period Tirpitz could do no more than prove her value simply by her existence – and this, for a warship of her dimensions and firepower, was almost certainly too little. Sulking deep in Norwegian fjords Tirpitz tied up huge Allied resources to keep her in check. Several attempts were made to sink her but she finally met her end suddenly in November 1944 being

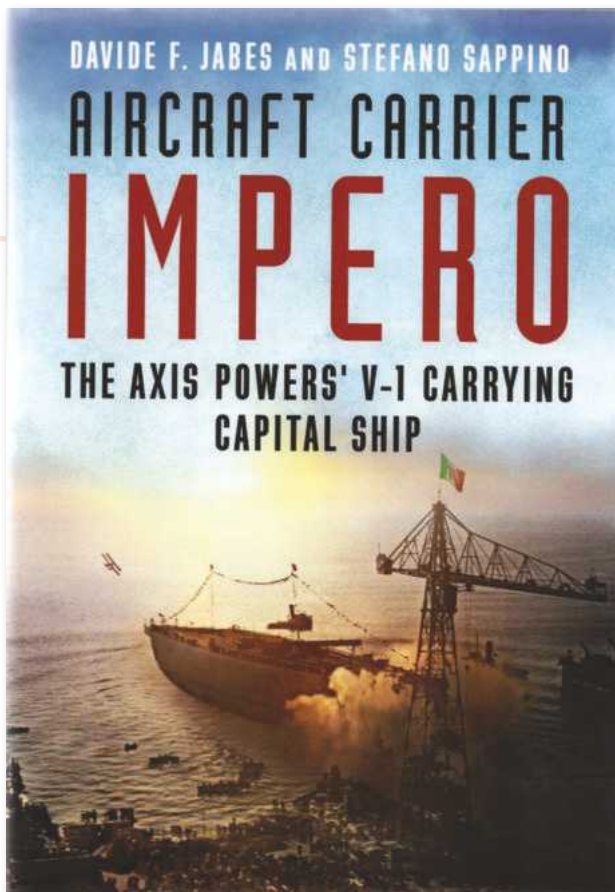
destroyed by aerial bombing by the RAF and inadequate underwater surveying which allowed the ship to capsize completely.

In this new book the author and Second World War historian, Daniel Knowles, begins by looking at the military and political situation in Germany that led to the decision to build Tirpitz, before going on to analyse the life and death of Germany's last great battleship, using drawings, diagrams, maps and photographs in both black and white and colour, many from the author's own collection, to illustrate his narrative.

This is, without doubt, one of the most interesting and informative books on the subject I've ever seen and would certainly make essential reading for maritime historians, warship modellers and enthusiasts. Thanks again to Jay Slater at Fonthill Media Ltd. for the review copy of the book which is available at sales@fonthillmedia.com

John Deamer

ISBN: 978-1-78155-669-6
Pages: 315
Price: £35.00 (RRP)
Format: Hardback - 256 x 178mm
Publisher: Fonthill Media Limited
Website: www.fonthillmedia.com



The Aircraft Carrier Impero – The Axis Power's V-1 Carrying Capital Ship by Davide F. Jabes and Stefano Sappino

From 1941, Italy had been developing a top-secret project to install guided rocket weapons aboard aircraft carriers. Campini Caproni's revolutionary guided rocket weapon, the DAAC (Device Anti-Aircraft Campini), which would later become Hitler's Henschel HS-117 Schmetterling (Butterfly), was the selected projectile. Classified intelligence on the V-1 flying bomb and other aircraft projects were acquired and discarded when Italian shipbuilder Ansaldo's naval architect, Lino Campagnoli (1911-1975), issued plans for the, unfinished, Impero battleship to be transformed into a modern fleet carrier.

Previously unpublished documentation reveals how the RN Impero, the last of the four state-of-the-art Littorio-class battleships, which was in advanced completion (hull components and engines

installed), was destined for conversion into a modern aircraft carrier.

In this this exhaustive historical review, the authors, Davide F. Jabes and Stefano Sappino, utilise hundreds of black & white photographs, line drawings, diagrams, charts and maps to illustrate the dramatic story of the Impero and the Regia Marina's (Royal Navy) developments and the lack of co-operation and strategic insight with the Regia Aeronautica, before and during the Second World War (1922 – 1943). Also, the book concludes, with an assessment of the final evaluation of the revolutionary Pugliese anti-torpedo system, based on unpublished German and Russian documentation.

This fascinating new book will certainly appeal to both warship modellers and maritime historians, with an interest in World War II, Axis Powers, ship design and development. Many thanks to Jay Slater at Fonthill Media Ltd. for the review copy of the book which is available at sales@fonthillmedia.com

John Deamer

ISBN: 978-1-78155-677-1

Pages: 256

Price: £30.00 (RRP)

Format: Hardback - 256 x 178mm

Publisher: Fonthill Media Limited

Website: www.fonthillmedia.com



British Destroyer vs German Destroyer

Number 88 in the Duel series of excellent Osprey books, this one, subtitled Narvik 1940 is by David Greentree and David Campbell with illustrations by Paul Wright and Allan Gilliland.

The early destroyer clashes between the Royal Navy and the Kriegsmarine during the Second World War began along the challenging coastline of Norway from April 1940, following the German invasion. The Battle of Narvik is the focus of this book and the individual engagements are covered in good detail, supported by a number of black and white photographs, colour maps, colour artwork, colour profiles and some very nice detailed colour drawings of both the British and German armament.

The latter including the British QF 4.7in, the Vickers Mk.III quadruple and Mk.IX torpedo while the German 12.7cm SK C/24 gun, 3.7cm SK C/30 gun and the 53.3cm G7a T1 torpedo is covered in equal detail. The book is broken down into eleven chapters including the usual Introduction, Bibliography and Index with main headings covering Chronology, Design and Development, Technical Specifications, The Combatants, The Strategic Situation, Combat, Analysis and Aftermath.

A great book, crammed with a vast amount of information; highly recommended. Thanks very much to Osprey for this review title which will not be available/expected until October 18, 2018.

MC

ISBN: 978-1-4728-2858-3

Pages: 80

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Format: Softback – 248mm x 185mm

Publisher: Osprey Publishing Ltd.

Website: www.ospreypublishing.com

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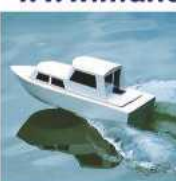
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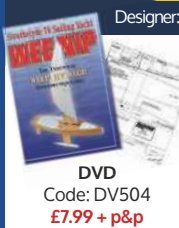
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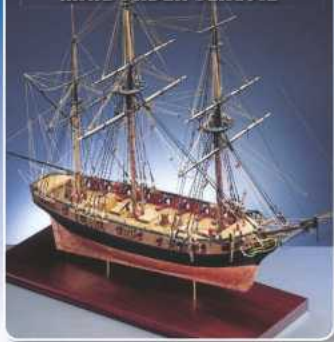
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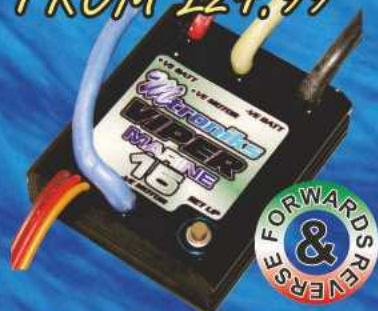
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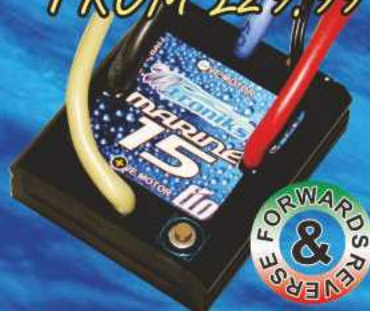
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